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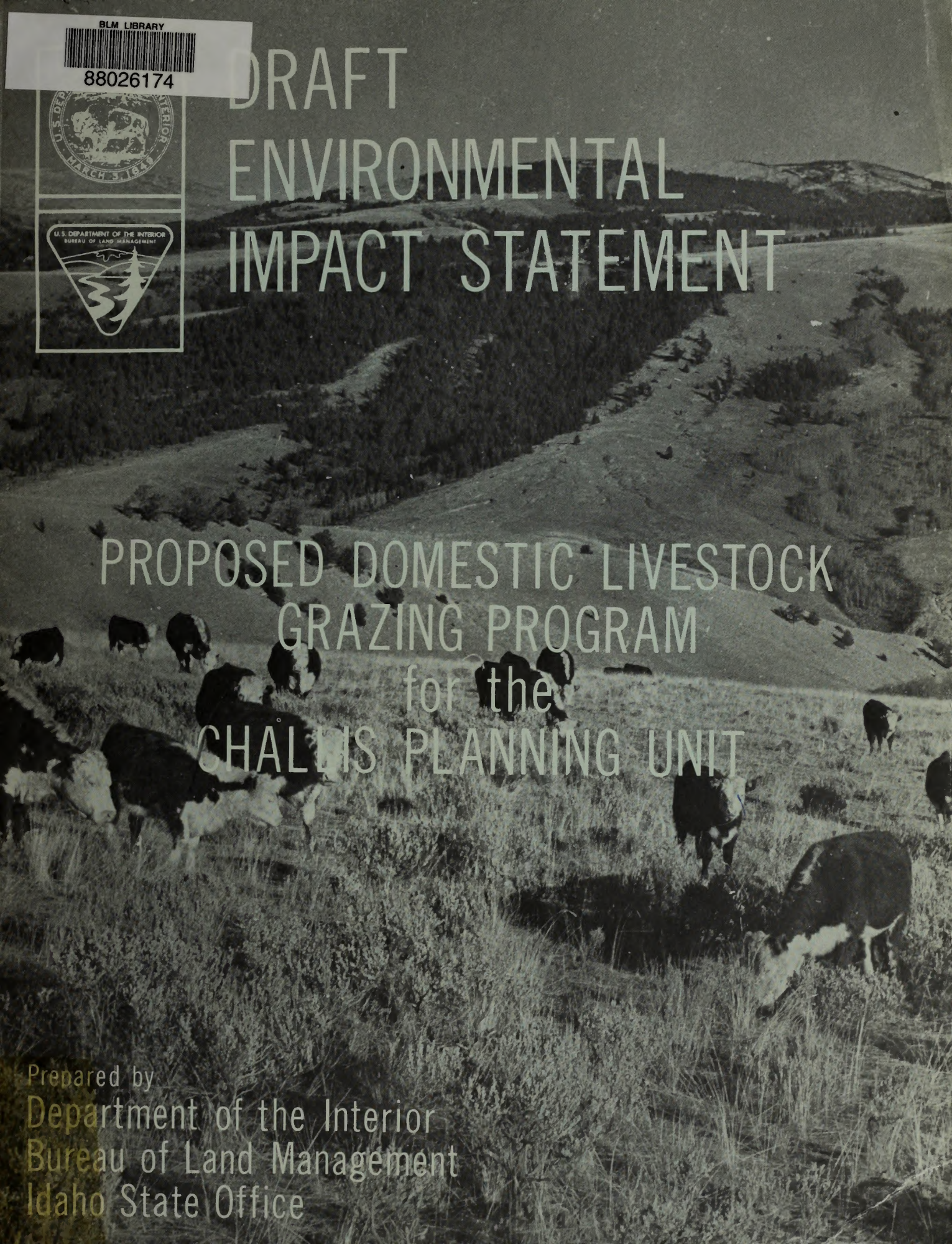

PROPOSED DOMESTIC LIVESTOCK GRAZING PROGRAM for the CHALLIS PLANNING UNIT

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DEPARTMENT OF THE INTERIOR

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ENVIRONMENTAL STATEMENT

PROPOSED DOMESTIC LIVESTOCK GRAZING PROGRAM FOR THE CHALLIS PLANNING UNIT

Prepared by

BUREAU OF LAND MANAGEMENT
DEPARTMENT OF THE INTERIOR

Wm L Matthews

State Director, Idaho State Office

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SUMMARY PAGE

(X) Draft ( ) Final Environmental Statement.

Department of the Interior, Bureau of Land Management.

1. Type of action (X) Administrative ( ) Legislative.

2. Brief Description of Action: Domestic livestock management plans are proposed for the Challis Unit (330,617 acres of national resource lands) in the Salmon District in Custer County, Idaho. Objectives of proposed actions are to (A) prevent progressive deterioration of the vegetative resource, (B) initiate an improving trend for vegetation, (C) provide improved habitat for anadromous and resident fish, (D) improve terrestrial wildlife habitat, (E) reduce soil loss by erosion and (F) provide improved grazing conditions for domestic livestock to enable ranch operators grazing the unit to continue productive operations. The objectives would be accomplished by implementing proposed Allotment Management Plans (AMPs) in 16 allotments and continuation of livestock exclusion in a frail land area.

Permanent grazing systems which would be implemented include three pasture rest-rotation (10 areas), two pasture rest-rotation (5 areas), two pasture deferred-rotation (3 areas) and one four pasture rest-rotation system.

In conjunction with management of grazing, range improvements including water developments, fencing, cattleguards and gates, vegetative manipulation and stock trails would be required.

3. Summary of Environmental Impacts: Watershed conditions would improve resulting in less sediment loss from the unit, vegetation production would increase, wildlife habitat would improve, as would habitat for anadromous and resident fish. Annual timber harvest would remain the same. Annual incomes to the ranching industry from national resource lands would increase, as would tax revenues.

Adverse impacts would include periodic increases of sedimentation in pastures where livestock would be concentrated for early spring use, short-term impacts on vegetation because of plants not being permitted to meet growth requirements, occasional competition of wildlife and wild horses for vegetation, and a decrease of grazing use for some operators.

4. Alternatives Considered:

(A) No Action (Continuation of present management).

(B) Discontinue livestock grazing.

(C) Custodial management.

(D) Implement AMPs on nine allotments, defer grazing on seven allotments.

(E) Implement AMPs on nine allotments, non-use for five years on seven allotments.

(F) Implement AMPs on eleven allotments and one pasture system on five allotments.

(G) Implement AMPs on five allotments, modified AMPs on four allotments, adjust season of use/AUMs on seven allotments.

5. Comments have been Requested from the Following:

See Attachment.

6. Date Draft Statement made Available to CEQ and Public:

June.

Comments have been Requested from the Following:

FEDERAL AGENCIES

Department of Agriculture

- Forest Service
- Soil Conservation Service

Environmental Protection Agency

Department of the Interior

- U.S. Fish and Wildlife Service
- Bureau of Reclamation
- Bureau of Outdoor Recreation
- U.S. Geological Survey
- Bureau of Mines
- National Park Service

Advisory Council on Historic Preservation

STATE AGENCIES

Idaho State Clearinghouse
Office of the Governor
Fish and Game Department
Department of Health and Welfare, Office of Environmental Services
Department of Transportation, Office of Environmental and Corridor Planning
Department of Lands
University of Idaho, Cooperative Extension Service
Department of Water Resources
State Historical Society, Archaeologist

LOCAL GOVERNMENT

Custer County Commissioners
Challis Chamber of Commerce
Custer County Planning and Zoning Commission
Mayor of Challis

ATTACHMENT

CONSERVATION ORGANIZATIONS

Sierra Club
Wildlife Management Institute
Natural Resources Defense Council
Fund for Animals
National Council of Public Lands
Wilderness Society
Ada County Fish and Game League
Idaho Environmental Council
Wildlife Federation
Friends of the Earth

LIVESTOCK ORGANIZATIONS

Idaho Cattlemen's Association
Idaho Woolgrower's Association
Tri-County Cattlemen's Association
Lemhi County Cattlemen's Association

OTHER ORGANIZATIONS

Society for Range Management
Women Opposed to Official Depression (WOOD)
Lemhi Soil Conservation District
Custer Soil Conservation District
Council for Agricultural Science and Technology (CAST)

Public hearings will be held on the Draft EIS in Challis and Boise, Idaho on July 7 and 9, 1976.

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PROPOSED DOMESTIC LIVESTOCK GRAZING PROGRAM FOR THE CHALLIS PLANNING UNIT

DRAFT EIS

JUNE 1976

CHAPTER 1

DESCRIPTION OF PROPOSED ACTION

BACKGROUND AND HISTORY

The Bureau of Land Management (BLM) circulated a final programmatic environmental impact statement (EIS) on its livestock grazing management program on national resource lands (NRL) in January, 1975 in compliance with Section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4327).

The EIS was designed to provide a broad description of the proposed grazing management program, alternatives, and impacts on the environment. It was also designed to provide a basis for subsequent environmental analyses and impact statements that might be required.

In October, 1973, several conservation groups filed a lawsuit in Federal District Court for the District of Columbia, arguing that the draft programmatic EIS did not comply with NEPA. Federal Judge Thomas A. Flannery subsequently granted their motion for summary judgment and directed the parties to work out an agreement for the completion of 212 site-specific EISs.

The Challis Planning Unit in east-central Idaho was designated as the first area for which an EIS would be prepared. It was to be completed by the end of fiscal year 1976.

The BLM has authorized grazing use in the area since 1936. TABLE 1-1 lists the animal unit months (AUMs) of livestock grazing licensed for the Challis Unit from 1948 through 1975. One AUM is the amount of forage required by one cow for one month.

Development of the proposed action is part of a total planning process (see Interrelationship section of this chapter) which BLM follows. The planning of documents including the Allotment Management Plans (AMPs) are available for inspection at BLM's Salmon, Idaho District Office.

TABLE 1-1

GRAZING USE IN THE CHALLIS UNIT 1948-1975

Year	AUMs Active Use 1/	AUMs Nonuse 2/	AUMs Exchange of Use 3/
1948	24,388	-----	---
1949	24,761	-----	---
1950	24,805	1,608	---
1951	26,286	117	---
1952	21,795	377	---
1953	22,563	472	---
1954	24,293	2,143	---
1955	22,673	5,142	---
1956	21,653	4,446	8
1957	20,979	837	205
1958	20,425	1,143	189
1959	20,843	587	113
1960	18,173	3,147	91
1961	13,833	306	328
1962	19,149	870	243
1963	21,428	580	813
1964	18,636	4,249	869
1965	21,124	961	855
1966	20,386	1,829	861
1967	19,057	3,263	850
1968	21,108	402	745
1969	20,889	1,147	745
1970	18,592	3,219	745
1971	17,102	4,912	599
1972	16,521	5,149	622
1973	16,682	5,230	790
1974	18,086	3,039	771
1975	18,062	3,897	948

1/ Licensed AUMs actually used.

2/ AUMs licensed but not used.

3/ AUMs on NRL exchanged for equivalent AUMs on unfenced private lands contiguous to NRL.

PROPOSED ACTION

The Bureau of Land Management proposes to implement an improved livestock grazing management program on national resource lands (NRL) within the Challis Planning Unit of the Salmon District in east-central Idaho (MAP 1-1).

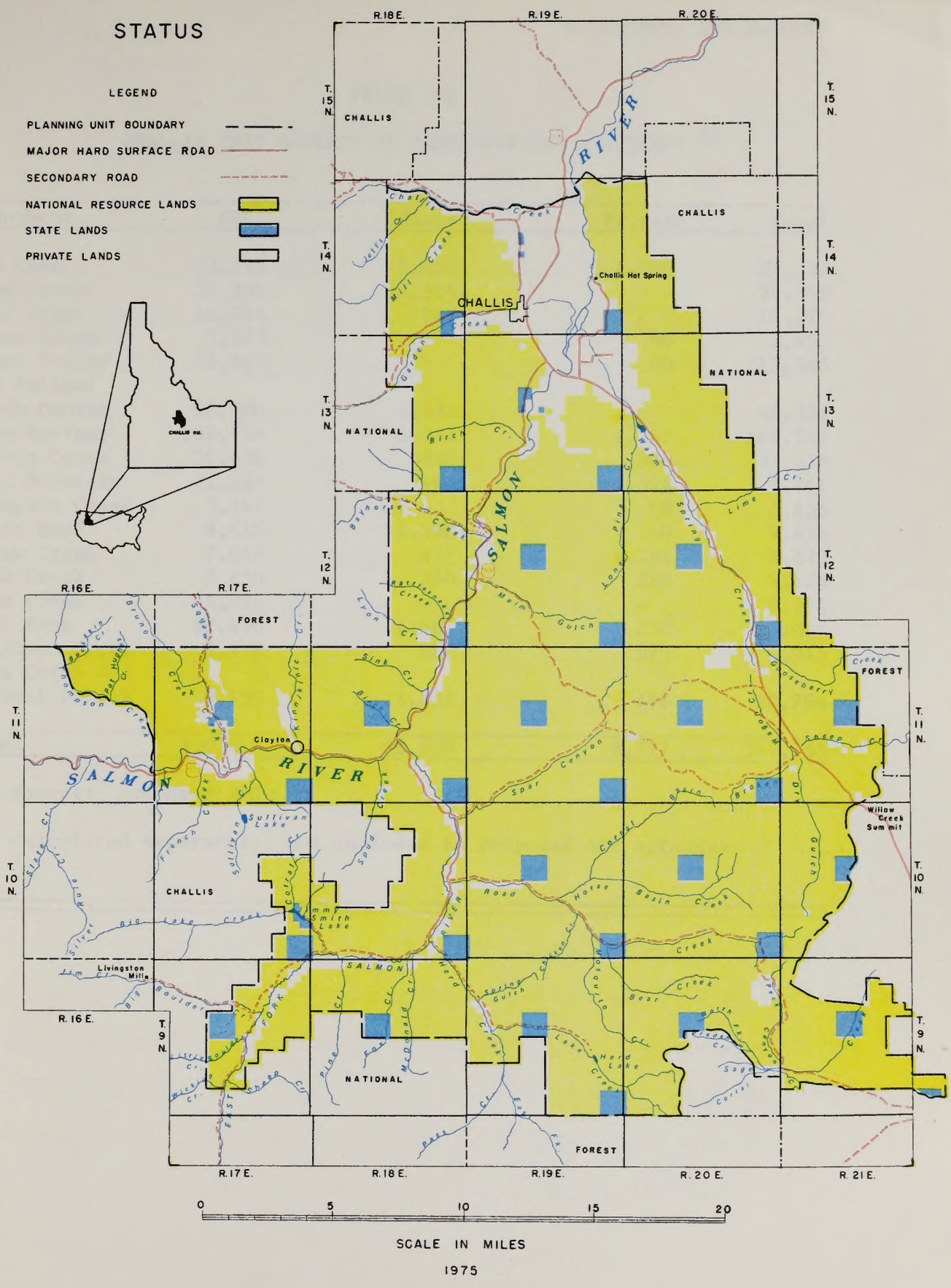
The 357,764-acre unit encompasses 330,617 acres of NRL, 18,370 acres of state lands, and 8,777 acres in private ownership (MAP 1-1 & TABLE 1-2).

The proposed grazing management program would modify the existing use pattern described in the livestock grazing section of Chapter 2. It would divide the unit into seventeen allotments containing 53 pastures (TABLE 1-2 & MAPS 1-2 and 1-3).

Allotment Management Plans (AMPs) including sequential rest-graze systems and various range improvements would be implemented over a five-year period on sixteen of the proposed allotments.

No change in present management is proposed for the Malm Gulch Frail Lands Allotment. These lands have been fenced for the past decade to exclude domestic livestock grazing.

No grazing system is proposed for the Sullivan Creek Allotment (indicated as Treatment A on Maps 1-4 through 7). A nearly impassable ridge keeps livestock of the two permittees separated, and one pasture includes considerable unfenced private land.



MAP 1-1 LOCATION AND LAND OWNERSHIP WITHIN THE CHALLIS PLANNING UNIT.

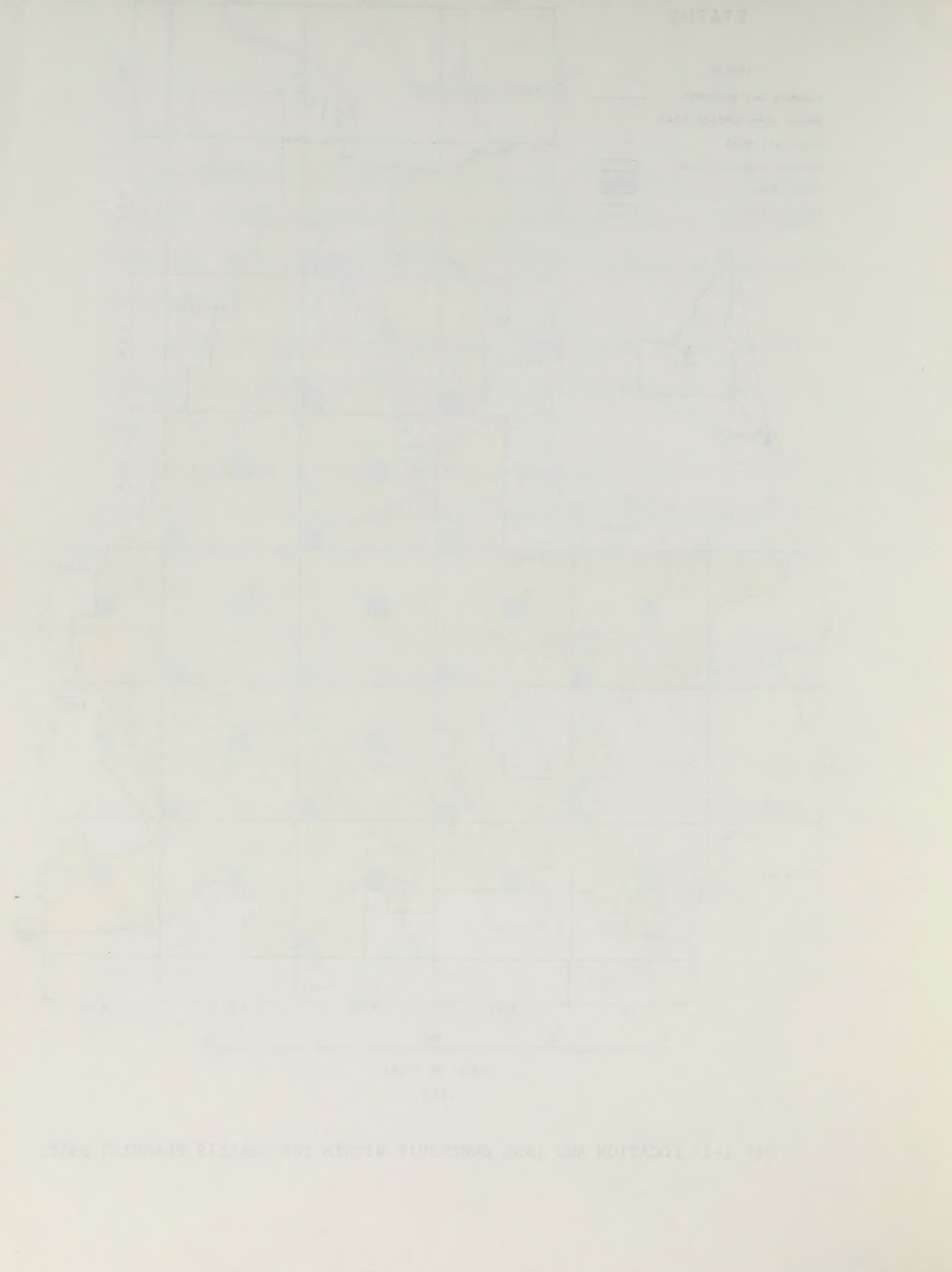


TABLE 1-2

CHALLIS UNIT ACREAGE BY OWNERSHIP AND ALLOTMENT 1/

Allotment	NRL	State	Private	Total
Red Lake	23,195	1,057	1,080	25,332
Herd Creek	22,384	2,304	-	24,688
Road Creek	15,231	843	-	16,074
Bruno Creek	2,373	-	80	2,453
Round Valley	13,503	-	80	13,583
San Felipe/ Peck Canyon	38,900	2,435	-	41,335
Warm Springs	102,439	5,342	1,360	109,141
Garden Creek	30,458	880	300	31,638
Bald Mountain	22,597	640	1,524	24,761
Thompson Creek	5,767	-	68	5,835
Split Hoof	8,415	1,100	140	9,655
Squaw Creek	7,049	477	1,294	8,820
Spud Creek	8,856	240	330	9,426
Pine Creek	4,294	-	-	4,294
East Fork	12,450	1,500	1,050	15,000
Sullivan Creek	3,570	400	975	4,945
Malm Gulch 2/ (Frail Lands)	9,136	1,152	496	10,784
Total	330,617	18,370	8,777	357,764

1/ Source: proposed AMPs.

2/ Calculated separately; not included in proposed AMP acreages.

The overall objectives of the proposed action are to (1) prevent further deterioration of the vegetative resource, (2) to initiate an improving trend in range condition with the objective of attaining at least a good condition class for each site within a reasonable time period, (3) provide improved habitat for anadromous and resident fish, (4) improve terrestrial wildlife habitat, (5) reduce soil loss from accelerated erosion, and (6) provide improved grazing conditions for domestic animals so the 38 permittees grazing the area can continue productive, yearlong ranching operations into the future.

TABLE 1-3 shows by allotment the annual domestic and wild animal forage requirements that would be achieved by the proposed action.

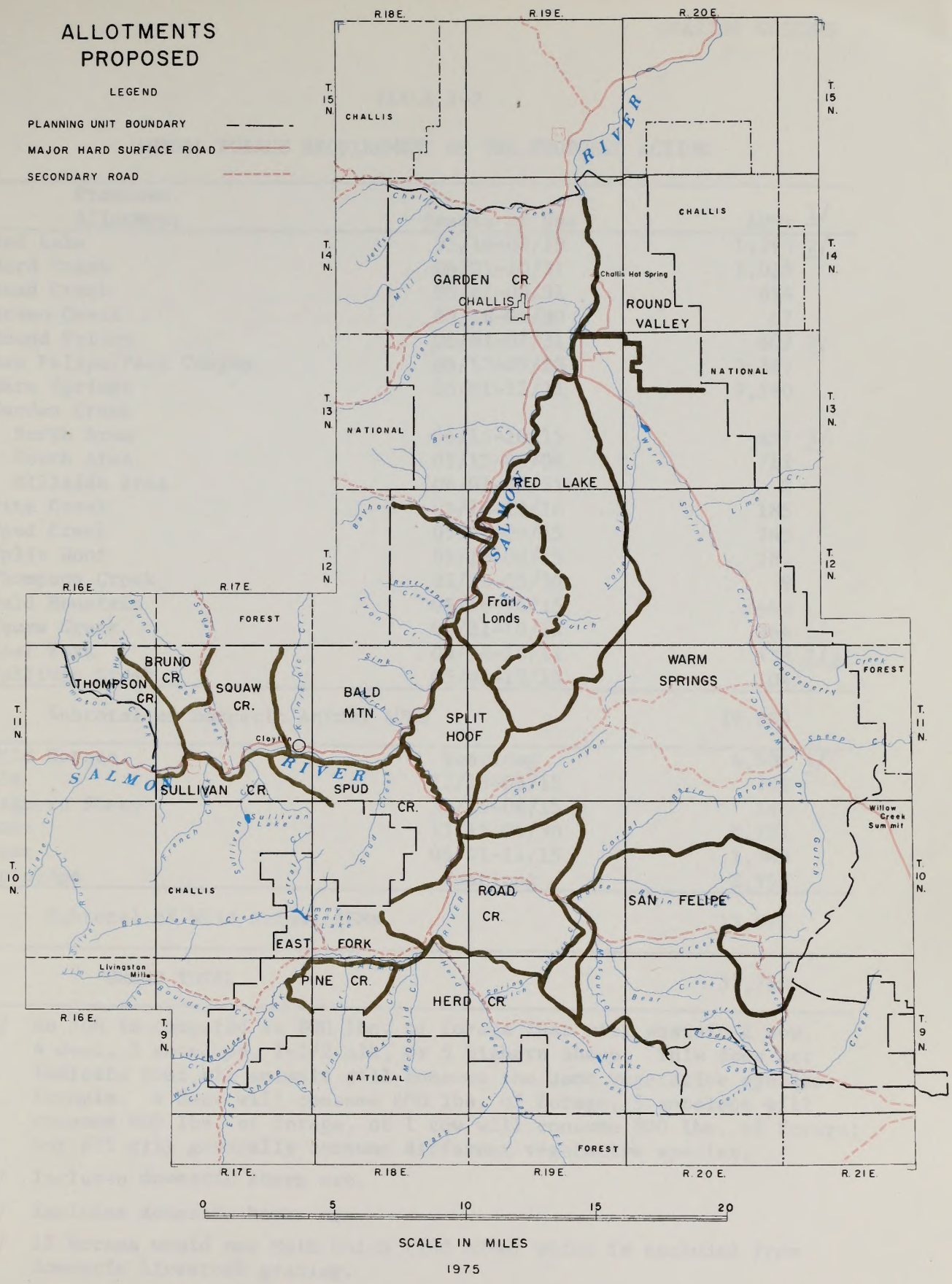
TABLE 1-4 shows the kind and number of grazing systems proposed for each proposed allotment. The proposed allotments would be subdivided into 53 pastures.

The following discussion briefly describes how each proposed grazing system would operate.

Three-Pasture, Rest-Rotation System

Allotments proposed for this system would be divided into three individual pastures, and one of the three following treatments would be applied to each pasture each year. The dates noted are typical but would vary from allotment to allotment.

Treatment A (year 1)	Graze from beginning of grazing season through seed-ripe (5/1 - 7/20)



MAP 1-2 PROPOSED ALLOTMENT BOUNDARIES.

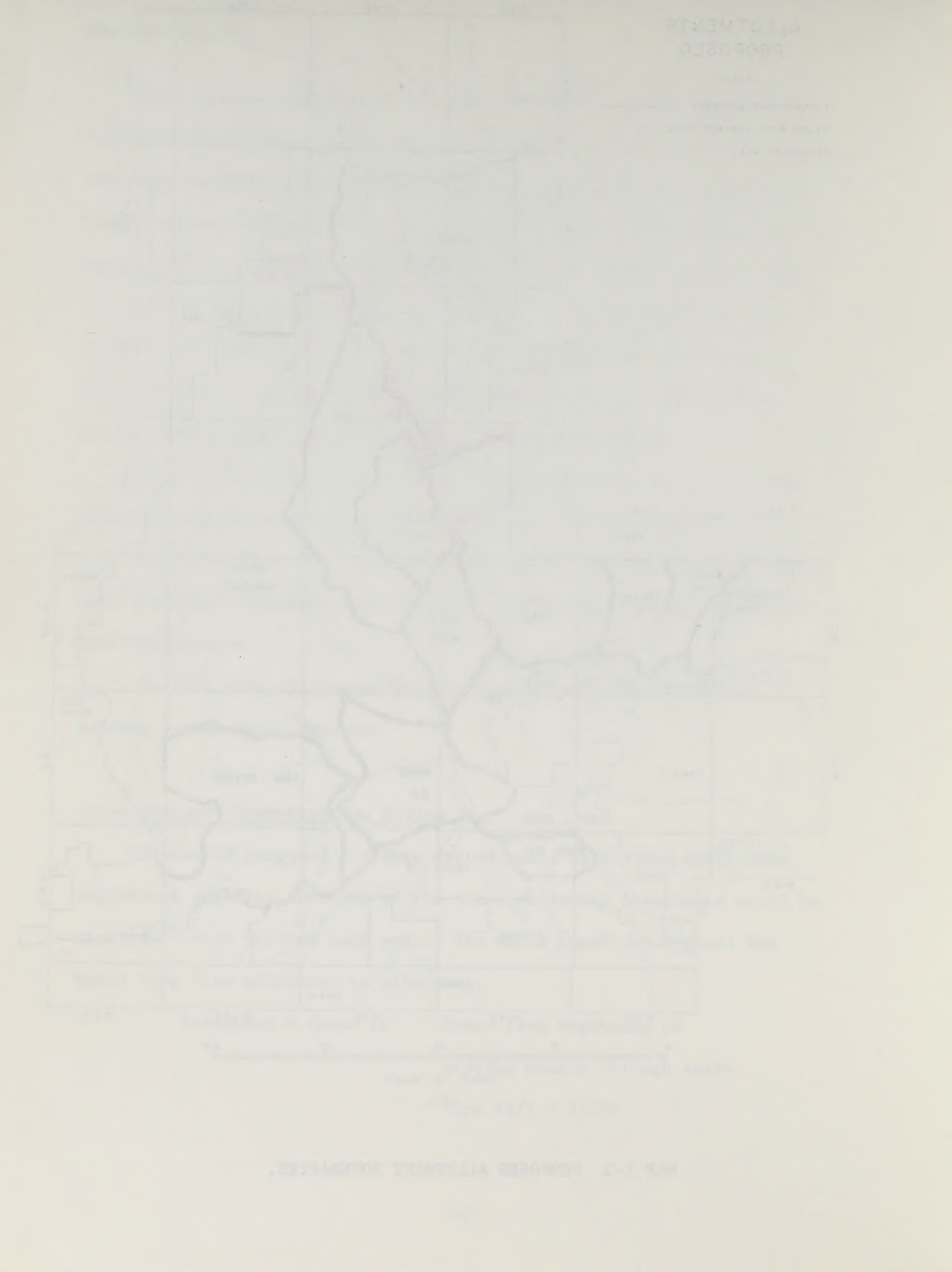


TABLE 1-3

ANNUAL FORAGE REQUIREMENT OF THE PROPOSED ACTION

Proposed Allotment	Season of Use	AUMs 1/
Red Lake	05/16-08/15	1,395 2/
Herd Creek	06/01-10/31	1,035
Road Creek	05/01-08/31	614
Bruno Creek	05/16-09/30	67
Round Valley	05/01-07/31	602 2/
San Felipe/Peck Canyon	05/17-09/23	3,387
Warm Springs	05/01-12/31	9,580
Garden Creek		
North Area	05/15-10/15	187 3/
South Area	05/15-09/04	712
Hillside Area	06/01-07/31	8
Pine Creek	05/16-10/16	185
Spud Creek	05/01-09/15	265
Split Hoof	05/16-06/15	282
Thompson Creek	05/16-05/30	9
Bald Mountain	05/16-10/15	660
Squaw Creek	05/21-10/15	364 3/
East Fork	05/16-10/11	433 2/3/
Sullivan Creek	05/01-10/15	104
Subtotal of Domestic Animal AUMs		19,889
Wild Horses	Yearlong	4,500 4/
Elk	12/15-05/15	748
Bighorn Sheep	11/15-06/15	140
Deer	11/15-04/30	4,221
Deer	05/01-11/15	1,303
Antelope	Yearlong	2,959
Subtotal of Wild Animal AUMs		13,871
GRAND TOTAL		33,760

1/ An AUM is computed as 800 lbs. of forage that will sustain 1 cow, 4 deer, 5 antelope, 1-1/2 elk, or 5 bighorn sheep. This does not indicate that all animals will consume the same vegetative species. Example: 4 deer will consume 800 lbs. of forage, 5 antelope will consume 800 lbs. of forage, or 1 cow will consume 800 lbs. of forage; but all will generally consume different vegetative species.

2/ Includes domestic sheep use.

3/ Includes domestic horse use.

4/ 12 horses would use Malm Gulch (180 AUMs) which is excluded from domestic livestock grazing.

TABLE 1-4

NUMBER OF PASTURES BY TYPE OF GRAZING SYSTEMS PROPOSED FOR CHALLIS UNIT ALLOTMENTS

Allotment	SYSTEMS				
	Three Pasture, Rest-Rotation	Two-Pasture, Rest-Rotation	Two Pasture, Deferred Rotation	Four-Pasture, Rest-Rotation	One Pasture
	NUMBER OF PASTURES				
Red Lake	3				
Herd Creek	3				
Road Creek	3				
Bruno Creek	1				
Round Valley	3				
San Felipe/Peck Canyon	3			4	
Warm Springs	9				
Garden Creek	3	4			
Squaw Creek			2		
Spud Creek			2		
Pine Creek			2		
East Fork 1/		1 1/	2 2/		
Bald Mountain		3			
Thompson Creek		1			
Split Hoof		2			
Sullivan Creek 3/					1
Malm Gulch Frail Lands 4/					X
	28	12	8	4	1

1/ One year only.

2/ Two years only.

3/ See discussion on page 1-4.

4/ Fenced to exclude domestic livestock grazing for the past decade.

Treatment B (year 2) Graze after seedripe until end of grazing season (7/21 - 8/31)

Treatment C (year 3) Rest season-long

Treatment by year and pasture would be as follows:

	Treatments		
	Pasture 1	Pasture 2	Pasture 3
Year 1	A	B	C
Year 2	B	C	A
Year 3	C	A	B

The first year livestock come into the allotment, they would enter pasture 1 and graze until seedripe of the key plant species. Then they would move to pasture 2 and graze for the remainder of the season. Pasture 3 would receive complete rest from grazing the entire year. The second year, livestock would begin grazing in pasture 3 and move to pasture 1 at seedripe. Pasture 2 would be rested. The third year, livestock would begin grazing in pasture 2 and move to pasture 3 at seedripe. Pasture 1 would be rested. The complete process would then be repeated.

Two-Pasture Systems

The proposed action includes two basic types of two-pasture systems: (1) a two-pasture, deferred rotation system, and (2) a two-pasture, rest-rotation system.

Deferred Rotation System

The following general treatments would be applied to each pasture every two years. The dates indicated are typical, but would vary from allotment to allotment.

Treatment A (year 1)	Graze from beginning of grazing season through seedripe (5/1 - 7/20)
Treatment B (year 2)	Graze after seedripe until end of grazing season (7/21 - 10/31)

Treatment by year and pasture would be as follows:

	Treatments	
	Pasture 1	Pasture 2
Year 1	A	B
Year 2	B	A

The first year, livestock would enter pasture 1 and graze until seedripe of the key plant species. They would then move to pasture 2 and graze for the remainder of the season. The second year, livestock would begin in pasture 2 and move to pasture 1 at seedripe. The complete process would then be repeated.

Two-Pasture, Rest-Rotation System

The following general treatments would occur under the two-pasture, rest-rotation system. Treatments under this system are referred to as

A and C rather than A and B. The dates indicated are typical, but would vary from allotment to allotment.

Treatment A (year 1) Graze from beginning of grazing season through close of grazing season (5/1 - 10/31)

Treatment C (year 2) Rest season-long

Treatment by year and pasture would be as follows:

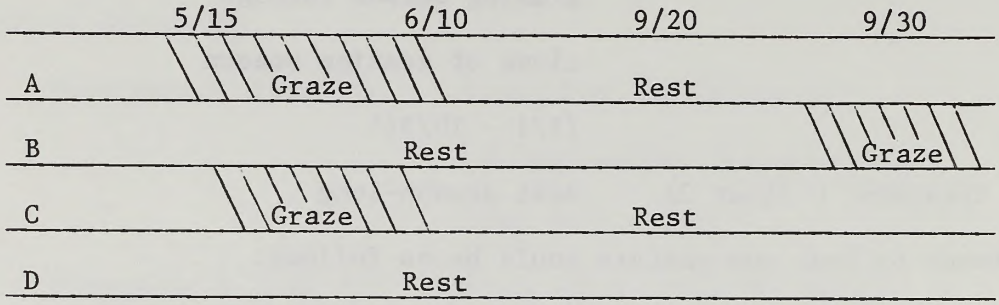
	Treatments	
	Pasture 1	Pasture 2
Year 1	A	C
Year 2	C	A

The first year, livestock would graze pasture 1 until they left the allotment. Pasture 2 would receive complete rest season-long. The following year, livestock would graze pasture 2 while pasture 1 was rested season-long. The complete process would then be repeated.

Four-Pasture, Rest-Rotation System

As illustrated by the following schematic, in the four-pasture, rest-rotation system, two pastures would be grazed from May 15 through June 10, while the other two pastures were rested. One of the rested

pastures would be used from September 20 through September 30, and the other would be rested the entire year. The complete process would then be repeated.



Treatment by year and pasture would be as follows:

	Treatments			
	Pasture 1	Pasture 2	Pasture 3	Pasture 4
Year 1	A	B	C	D
Year 2	B	C	D	A
Year 3	C	D	A	B
Year 4	D	A	B	C

MAPS 1-3 through 1-7 show the proposed location of each grazing treatment and improvement by year of the proposed action. Treatments A and C within the four-pasture system are both shown as treatment A since they are the same. Treatment B is shown as B and the rest treatment D is portrayed as treatment C, the rest treatment.

Administration and management of the proposed grazing systems would be accomplished through standard BLM licensing and operating procedures.

Livestock grazing use would be controlled through periodic aerial and ground surveillance utilizing normal range use supervision procedures. These would include conducting periodic livestock counts, requiring ear-tagging, paint branding, or other livestock identification methods.

Livestock typically would be trailed to allotments rather than hauled or trucked as is the case in some other areas. Animal movement between pastures would be accomplished by allowing natural drift or by herding. At the conclusion of grazing, livestock would normally be trailed to the National Forest, other range, or back to the ranch property.

TABLE 1-5 contains the average acreage of each treatment by year of the proposed action.

TABLE 1-6 shows the management objectives and/or actions of each proposed AMP.

TABLE 1-7 lists the proposed range improvements by allotment.

TABLE 1-8 contains the proposed improvements, probable year of completion, number of acres that would be disturbed, and construction manpower requirements. Year 1 represents the first full summer season following completion of the final environmental impact statement (EIS). Improvements listed in year 1 would be constructed during that summer season. The grazing systems would be implemented during year 2 of the proposed action.

Approximately 2,450 acres of land would be disturbed during construction of all proposed improvements.

TABLE 1-5

AVERAGE ACREAGE AND YEAR OF PROPOSED GRAZING TREATMENTS

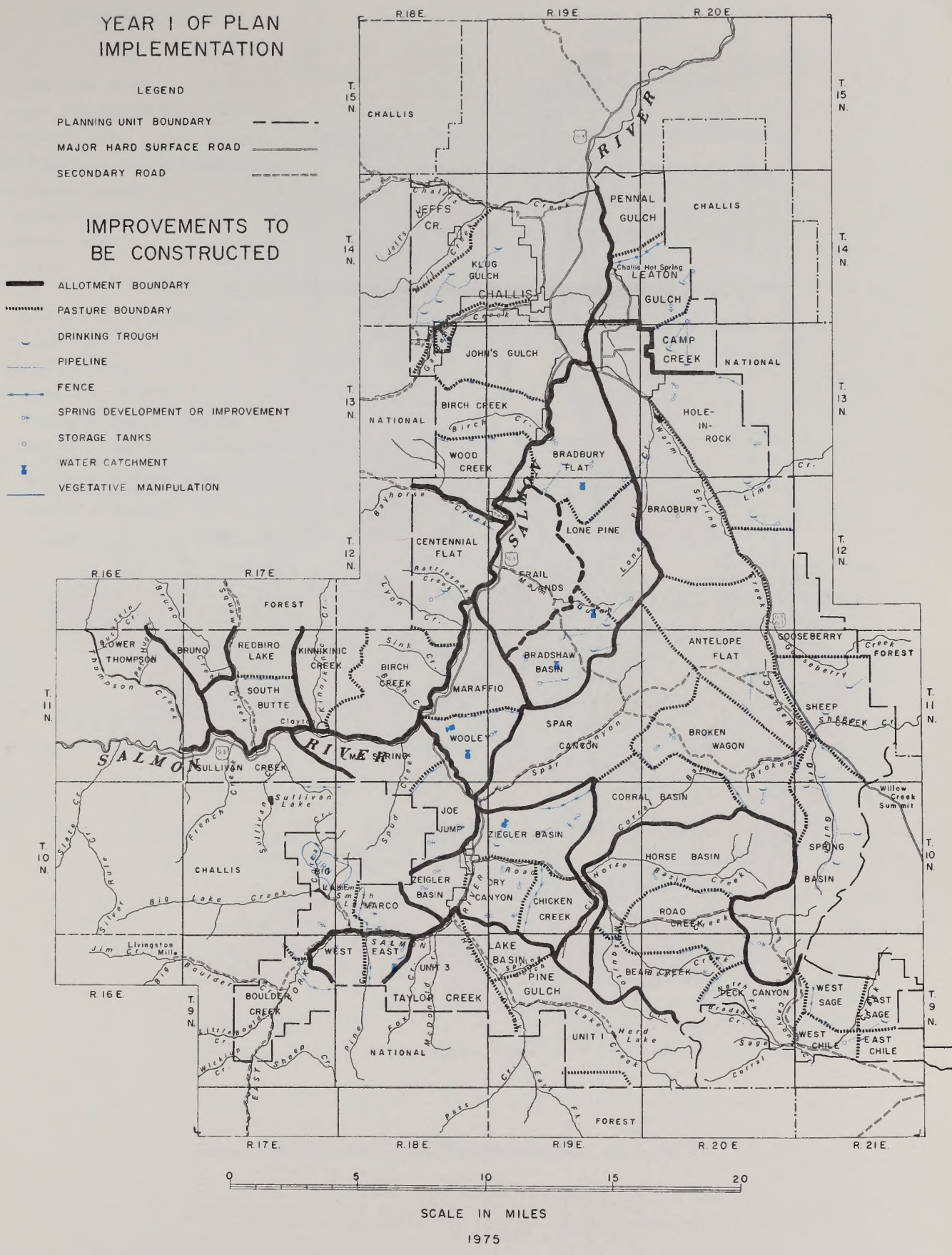
Year of the Proposal	Average Acreage by Treatment		
	A	B	C
1	Graze as in the existing situation		
2	139,659	101,783	116,322
3	128,343	104,758	124,663
4	141,400	105,717	110,647
5	123,288	108,215	126,261

MAP 1-8 shows the proposed location and year of construction of all proposed improvements by proposed allotments and pastures. A large-scale reproduction of this map is included in the pocket attached to the inside of the back cover of this EIS.

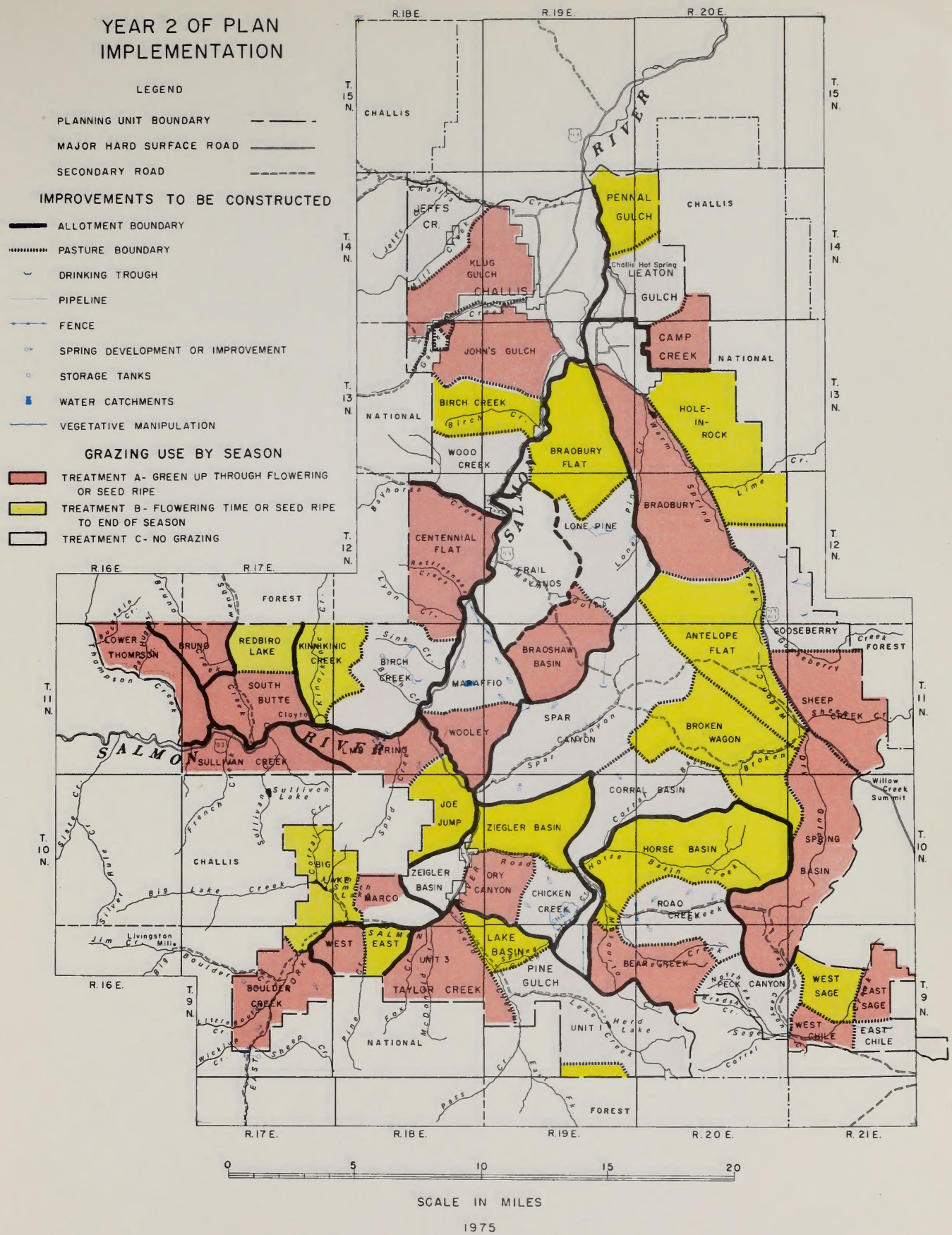
Maintenance inspections of all water developments would be made annually. Fence maintenance inspections would be made at five-year intervals.

Any major repairs which could be classified as reconstruction would be performed by the BLM. It is proposed that day-to-day or yearly upkeep of improvements would be performed by the grazing permittees in proportion to benefits that accrue to livestock.

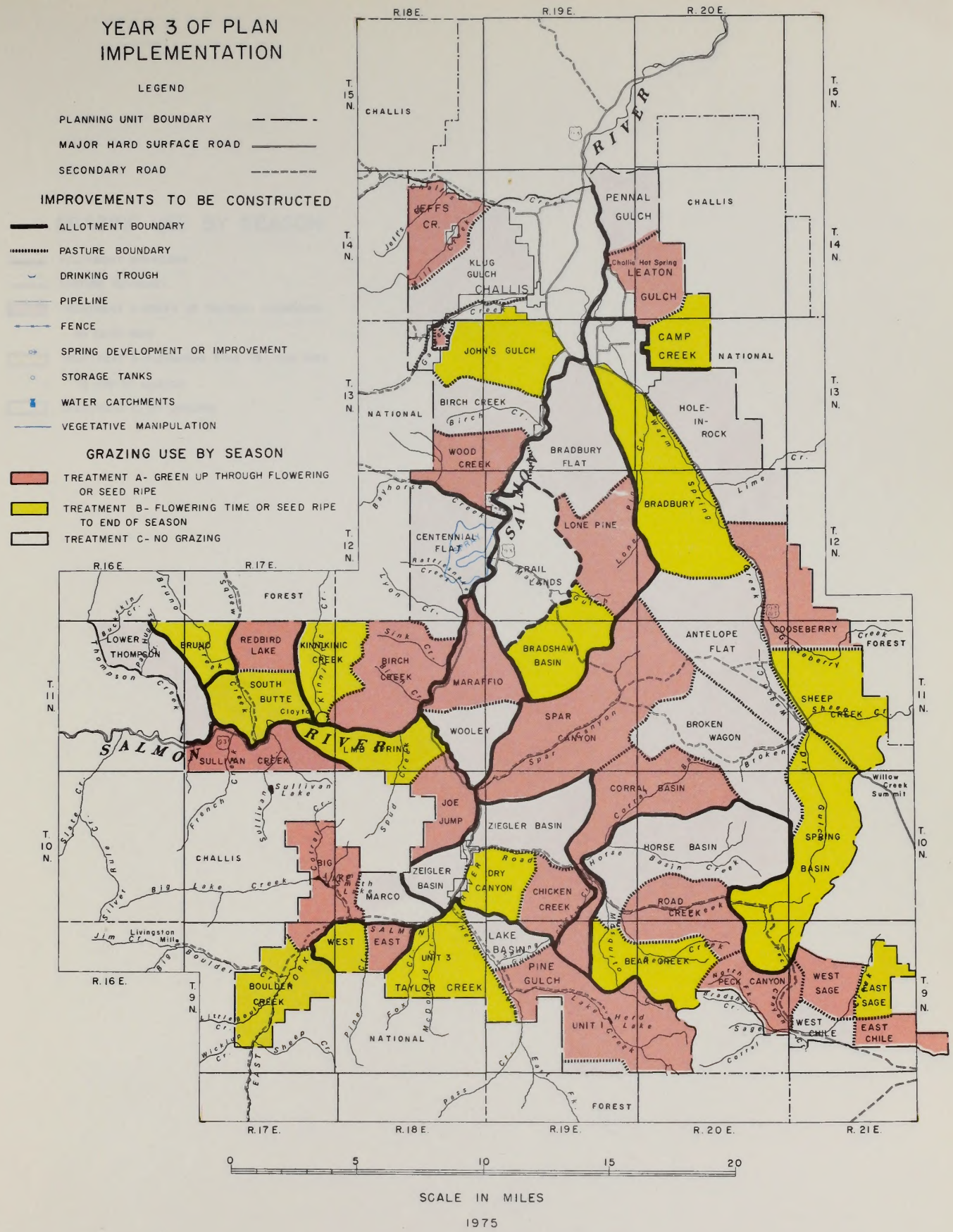
The proposed grazing management program would be implemented at the beginning of the normal grazing season in year 2. Simultaneously, work would begin on year 2 improvements, so the grazing systems would be fully implemented at the end of that year. The sagebrush spraying operation would be scheduled in year 3 to coordinate with the full year rest period for that allotment.



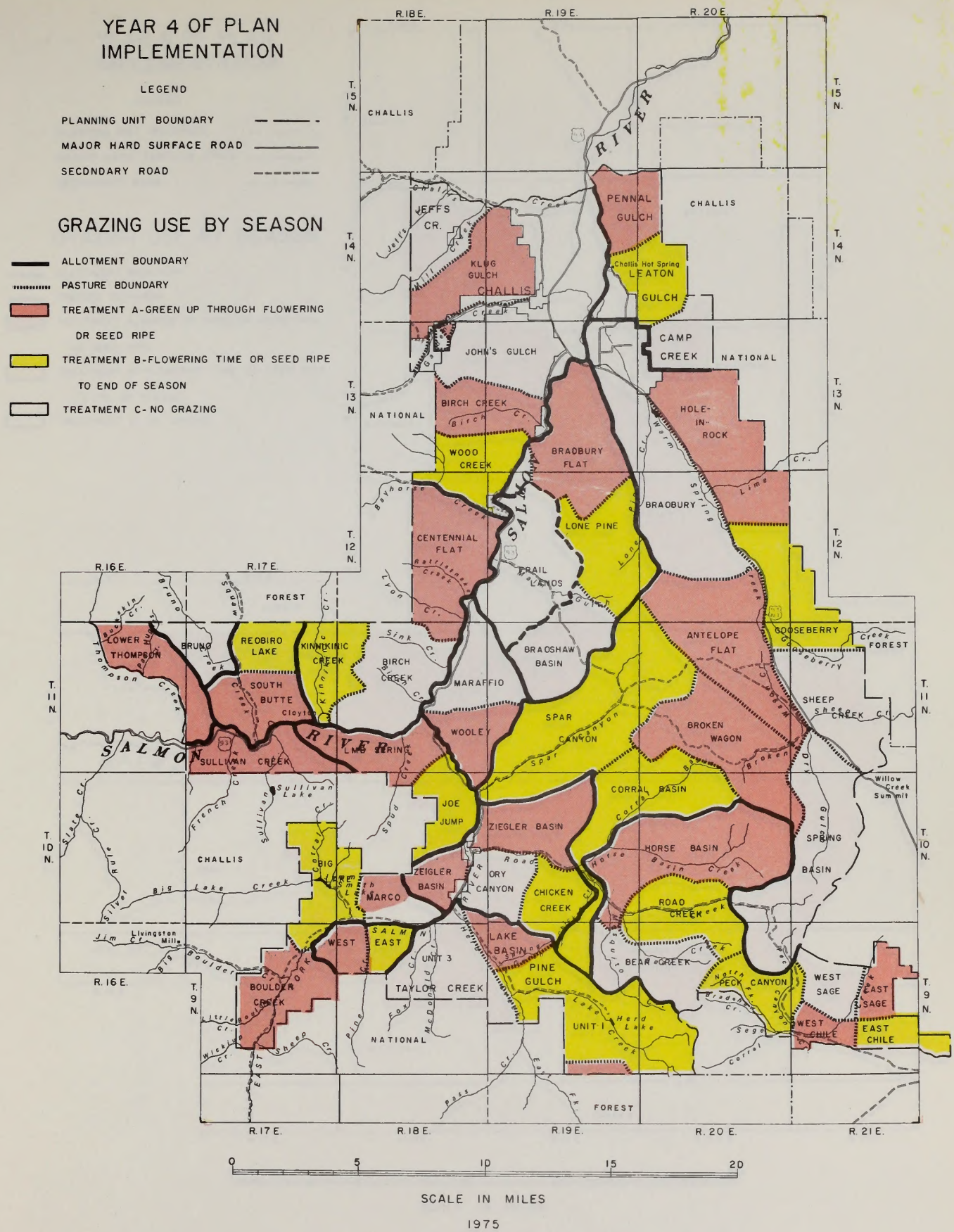
MAP 1-3 LOCATION OF PROPOSED IMPROVEMENTS TO BE CONSTRUCTED IN YEAR 1 OF PROPOSAL.



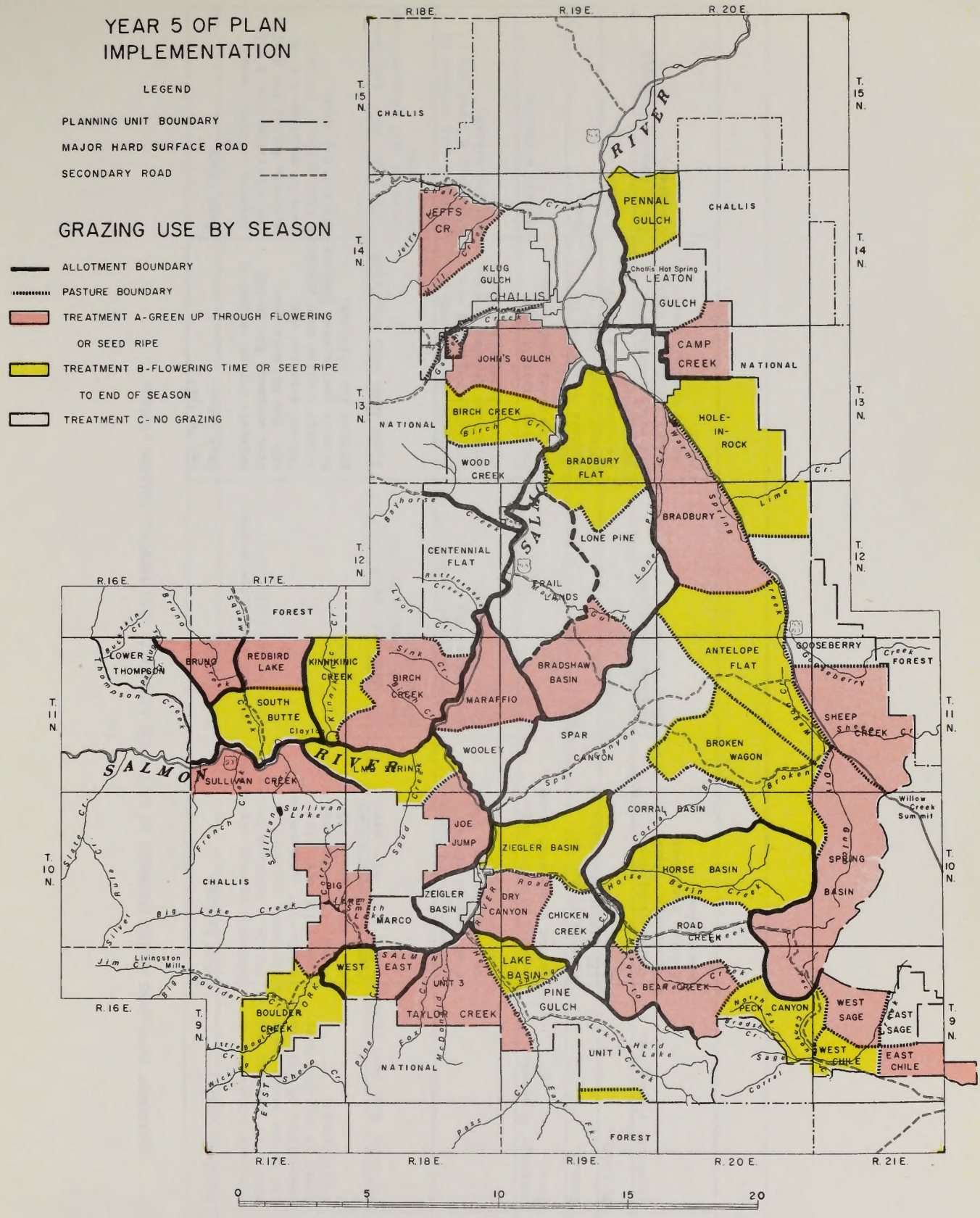
MAP 1-4 YEAR 2 OF THE PROPOSAL INDICATING LOCATION OF TREATMENTS A, B, AND C ALONG WITH THE IMPROVEMENTS TO BE CONSTRUCTED DURING THAT YEAR.



MAP 1-5 YEAR 3 OF THE PROPOSAL INDICATING THE LOCATION OF TREATMENTS A, B. AND C ALONG WITH THE IMPROVEMENTS TO BE COMPLETED THAT YEAR.



MAP 1-6 YEAR 4 OF THE PROPOSAL INDICATING THE LOCATION OF TREATMENTS A, B, AND C FOR THAT YEAR.



MAP 1-7 YEAR 5 OF THE PROPOSAL INDICATING THE LOCATION OF TREATMENTS A, B, AND C FOR THAT YEAR.

TABLE 1-6

MANAGEMENT OBJECTIVES AND/OR RESOURCES OR ACTIVITIES ASSOCIATED WITH PROPOSED GRAZING SYSTEMS

Affected Resource or Activity	Sullivan Creek	Warm Springs	Bruno Creek	San Felipe/ Peck Canyon	Herd Creek
Wildlife Habitat	Maintain forage for 40 deer & 10 elk that winter in the area. Maintain composition of 20% sagebrush in critical deer winter range.	Maintain natural migration routes. Increase forage for deer, antelope, & birds--500 antelope year-round, 100 deer year-round, 150 elk winter. Maintain minimum 20% sagebrush composition.	Increase vegetative production for wildlife use.	Maintain forage habitat & free movement for 50-100 elk, 200-300 mule deer, 350-400 antelope and several hundred sage grouse. Provide undisturbed fawning grounds for antelope.	Improve critical range for wintering deer & elk. Maintain forage for small herd of antelope & blue & sage grouse. Protect elk calving areas.
Livestock Use	107 AUMs min. ann. prod.	9,306 AUMs min. prod.	130 AUMs ann. prod. Increase vegetation for livestock.	3,400 AUMs min. ann. prod.	1,035 AUMs min. ann. prod. Increase calf crop and beef production.
Soil Stabilization		Increase ground cover from average of 19% to 37%. Decrease SSF 1/ from average of 40 to 27.	Increase ground cover from 26% to 45%. Reduce SSF from 24 to 15.	Increase ground cover & litter by beginning one 3-pasture grazing system, and one 4-pasture system.	Decrease soil erosion by utilizing a 3-pasture grazing system.
Streamside Vegetation	Maintain at present level.	Improve riparian vegetation along Road Creek.	None.	Improve riparian vegetation along Road & Sage Creeks.	Protect & improve.
Wild Horses	None.	Provide forage for 120 horses annually.	None.	Provide forage for 70 horses season-long.	None.
Length of Grazing Cycle	No change.	3 Years.	3 Years.	2 systems--one 4 years, one 3 years.	3 Years.
Key Plant Species	Bluebunch wheatgrass.	Indian ricegrass, white sage, Idaho fescue, bluebunch wheatgrass.	Bluebunch wheatgrass, Idaho fescue.	Bluebunch wheatgrass, Indian ricegrass, Idaho fescue, crested wheatgrass.	Idaho fescue, sandberg bluegrass.

1/ Soil surface factor.

TABLE 1-6 (cont.)

MANAGEMENT OBJECTIVES AND/OR RESOURCES OR ACTIVITIES ASSOCIATED WITH PROPOSED GRAZING SYSTEMS

Affected Resource or Activity	Round Valley	Road Creek	Spud Creek	Bald Mountain	East Fork
Wildlife Habitat	Provide undisturbed habitat each spring for wildlife feeding & antelope fawning. Maintain 20% sagebrush shadscale and budsage. Maximize forage & habitat for deer, antelope & game birds.	Provide undisturbed areas for sage grouse nesting & rearing in Ziegler Basin & area south of Road Creek.	Maintain browse species to the extent needed to provide maximum deer habitat. Improve density in wet meadows & bottom areas for improved habitat for blue grouse and sage grouse.	Maintain 5% sagebrush for deer browse. Improve overall range conditions for re-establishment of of sage grouse.	Provide for a maximum quality bighorn sheep winter range. Maintain adequate browse for deer in critical wintering areas. Maintain present deer and grouse forage.
Livestock Use	603 AUMs min. ann. prod.	628 AUMs min. ann. prod.	265 AUMs min. ann. prod.	660 AUMs min. ann. prod.	503 AUMs min.
Soil Stabilization	Stabilize soil in Penal Gulch.	Increase ground cover to stabilize soil & siltation of East Fork & Salmon Rivers.	Decrease siltation of the Salmon River & East Fork by reducing erosion and loss of topsoil.	Increase ground cover on 2 pastures from 38% to 43%. Maintain 54% on third. Reduce SSF from 65 to 33 on 2 pastures and maintain at 11 on third.	Increase ground cover & litter accumulation from 43% to 57% (avg.). Decrease SSF from 44 to 36 (avg.)
Streamside Vegetation	None.	Improve riparian vegetation along Road Creek.	None.	Maintain & improve riparian vegetation on Birch, Sink, Lyon & Rattlesnake Creeks.	Improve riparian vegetation along Big Lake Creek.
Wild Horses	None.	Provide forage for 21 horses.	None.	None.	None.
Length of Grazing Cycle	3 Years.	3 Years.	2 Years.	2 Years.	2 Years.
Key Plant Species	Indian ricegrass, squirreltail, sand dropseed, ryegrass, bluebunch wheatgrass.	Bluebunch wheatgrass.	Big sage, bluebunch wheatgrass.	Bluebunch wheatgrass, Idaho fescue, Stle, Artr, Orhy, Stipa, Big sage, Indian ricegrass.	Big sagebrush, bluebunch wheatgrass.

TABLE 1-6 (cont.)

MANAGEMENT OBJECTIVES AND/OR RESOURCES OR ACTIVITIES ASSOCIATED WITH PROPOSED GRAZING SYSTEMS

Affected Resource or Activity	Garden Creek	Split Hoof	Squaw Creek	Red Lake	Thompson Creek
Wildlife Habitat	Maximize bighorn sheep habitat. Maintain 25% sagebrush for 450 deer in winter and 40 in summer 30 antelope year-round.	Maintain forage for deer and sage grouse. Provide maximum habitat for deer & antelope.	Maintain 20% sagebrush composition for winter deer browse Maintain blue grouse habitat.	Maintain & provide a maximum amount of deer & antelope habitat. Maintain habitat for sage grouse & chukars.	None.
Livestock Use	1,117 AUMs min. ann. prod.	315 AUMs min. ann. prod.	364 AUMs min. ann. prod.	1,395 AUMs min. ann. prod.	Maintain forage for 34 cattle 1/2 month bi-annually 9 AUMs.
Soil Stabilization	Improve SSF from an average 52 to 36. Increase ground cover from an average 36% to 53%.	Increase ground cover from average 22% to 28%. Decrease SSF from average 41 to 37.	Increase ground cover & litter from 16% to 58%. Decrease SSF from 28 to 10.	Decrease SSF from average 66 to 50. Increase cover density from average 11% to 20%.	
Streamside Vegetation	Improve present condition of streamside vegetation and streambanks. Mill Creek, Bayhorse Creek, Garden Creek.	None.	Improve riparian vegetation along Squaw Creek.	Improve riparian vegetation along Lone Pine Creek.	Maintain sufficient vegetation along Thompson Creek to protect streambanks.
Wild Horses	None.	Provide forage for 27 horses.	None.	Maintain habitat & provide forage for 51 horses.	None.
Length of Grazing Cycle	2 Years.	2 Years.	2 Years.	3 Years.	2 Years.
Key Plant Species	Bluebunch wheatgrass, Idaho fescue, ryegrasses, Indian ricegrass.	Bluebunch wheatgrass, Indian ricegrass.	Bluebunch wheatgrass, Idaho fescue.	Indian ricegrass, squirreltail, white sage, bluebunch wheatgrass, sagebrush buckwheat.	Bluebunch wheatgrass.

TABLE 1-6 (cont.)

MANAGEMENT OBJECTIVES AND/OR RESOURCES OR ACTIVITIES ASSOCIATED WITH PROPOSED GRAZING SYSTEMS

Affected Resource or Activity	Pine Creek	
Wildlife Habitat	Maintain 20% big sagebrush for maximum deer browse & grouse forage.	
Livestock Use	180 AUMs min. ann. prod.	
Soil Stabilization	Increase ground cover from 47% to 60%. Reduce stream bottom SSF from 52 to 35 and remaining area from 35 to 30.	
Streamside Vegetation	Improve riparian vegetation along Pine Creek.	
Wild Horses	None.	
Length of Grazing Cycle	2 Years.	
Key Plant Species	Bluebunch wheatgrass, big sage.	

TABLE 1-7

PROPOSED ALLOTMENT IMPROVEMENTS ASSOCIATED WITH PROPOSED GRAZING SYSTEMS

Allotment	Water Developments	Fences	Cattleguards & Gates	Vegetative Manipulation	Roads & Trails
Red Lake	2 Spring developments 12 Spring fencings 7 Spring improvements 4.0 Mi. pipeline 7 Storage tanks 3 Catchments	3.2 Mi. 3-strand barbed wire	None	None	None
Round Valley	1 Storage tank 5 Spring developments 5 Mi. pipeline	3 Mi. 4-strand barbed wire	None	None	None
Road Creek	9 Spring developments 8 Mi. pipeline 2 Catchments	5.5 Mi. 3-strand 1 Mi. 4-strand	None	600 Ac. sage-brush-chain & seed	None
Sullivan Cr.	None	1 Mi. 4-strand barbed wire	None	None	None
Warm Springs	16 Spring developments 11.7 Mi. pipeline	13 Mi. 3-strand & 7 Mi. 4-strand barbed wire	2 Gates	None	None
Bruno Creek	None	None	None	None	None
San Felipe-Peck Canyon	7 Spring developments 3 Mi. pipeline	18.5 Mi. 3-strand barbed wire	1 Cattleguard	None	None

TABLE 1-7 (cont.)

PROPOSED ALLOTMENT IMPROVEMENTS ASSOCIATED WITH PROPOSED GRAZING SYSTEMS

Allotment	Water Developments	Fences	Cattleguards & Gates	Vegetative Manipulation	Roads & Trails
Spud Creek	4 Spring developments 1/4 Mi. pipeline	1.8 Mi. 4-strand barbed wire	None	None	3/4 Mi. stock trail
Bald Mountain	3.7 Mi. pipeline	4.75 Mi. 4-strand barbed wire	None	1000 Ac. sage-brush Spraying	None
Thompson Creek	None	None	None	None	None
Pine Creek	3 Spring developments 2 Spring improvements	3 3-strand barbed wire	None	None	None
East Fork	5 Spring developments 1 Mi. pipeline	3 Mi. 3-strand & 2 Mi. 4-strand barbed wire	1 Cattleguard 1 Wire gate	600 Ac. Sage-brush burn	None
Garden Creek	7 Mi. pipeline	4 Mi. 4-strand barbed wire		None	None
Split Hoof	2 Spring developments 4 Spring improvements 3 Catchments (fenced)	5.5 Mi. 3-strand & 0.5 Mi. 4-strand barbed wire	None	None	None
Squaw Creek	1 Spring development	1.5 Mi. 4-strand barbed wire	None		None
Herd Creek	7 Catchments 10 Troughs	10.5 Mi. 4-strand barbed wire	1 Gate	None	None

TABLE 1-8

NUMBER OF PROPOSED IMPROVEMENTS, PROBABLE YEAR OF COMPLETION, AND NUMBER OF ACRES DISTURBED

Improvement	Year 1	Year 2	Year 3	Total Units	Ac. Disturbed Per Unit	Total Acres Disturbed	Man Days Required Per Unit For Construction
Water Developments							
Spring Development	32	22		54	.35	18.9	12
Spring Improvement	9	6		15	.17	2.5	9
Catchment	7	1		8	5	40.0	21
Pipeline	31 miles	8 miles		39 miles	1 A/mile	39.0	3
Storage Tank	5	3		8	.23	1.8	12
Watering Trough	9			9	.01	00.1	9
Spring & Catchment Fencing	12 "			12 "	5	60.0	9
Fences							
3-Strand Barbed Wire	52 "	7 "		59 "	1 A/mile	59.0	20
4-Strand Barbed Wire	21 "	1 "		22 "	1 "	22.0	15
Cattleguards		2		2	0.005	1/	6
Gates	3			3	0.0005	-	1
					Total	243.3	
Vegetation Manipulation							
Sagebrush Burning	600 acres			600 acres		600.00	40 Total
Sagebrush Chaining		600 acres		600 "		600.00	20 Total
Sagebrush Spraying			1000 acres	1000 "		1000.00	18 Total
Roads or Trails		.75 miles		0.75 miles	1.5 A/mile	1.1	20 Total
Total Acres Disturbed						2444	

1/ Less than .1 of 1 acre.

The maximum time required to complete the longest grazing cycle would be four years; therefore, a complete grazing cycle for the unit would occur in years 5, 9, 13, and 17.

The following discussion briefly describes the proposed range improvements.

Range Improvements

Spring Development

The normal procedure to develop a spring which produces a point discharge (FIGURE 1-1), would be to use a backhoe to excavate a hole four feet square and three feet deep. A vertical perforated pipe would be inserted to function as a collection box. Water would be piped from the box via a small (generally 1 1/4-inch) diameter plastic pipe to a trough.

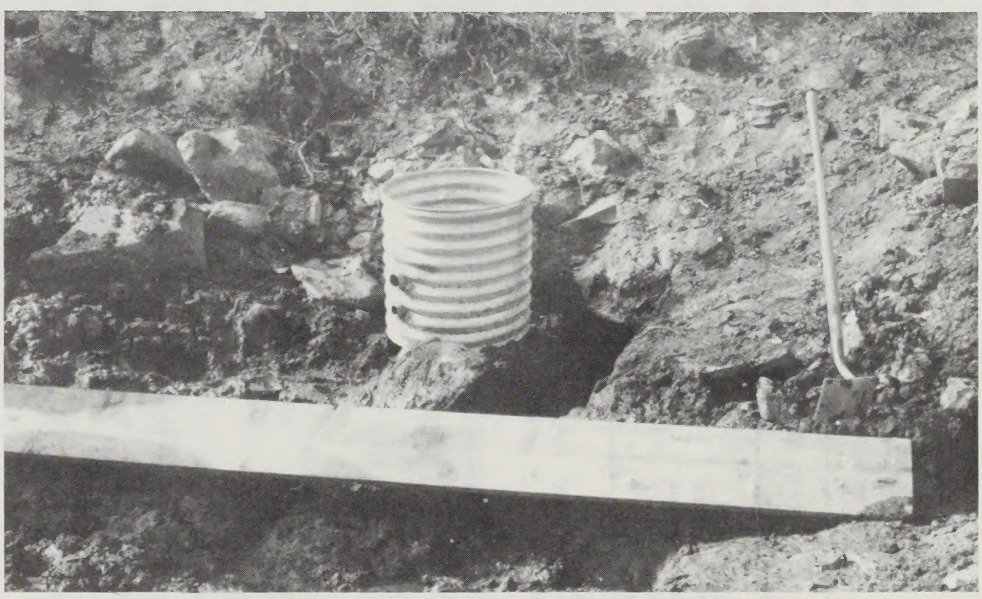
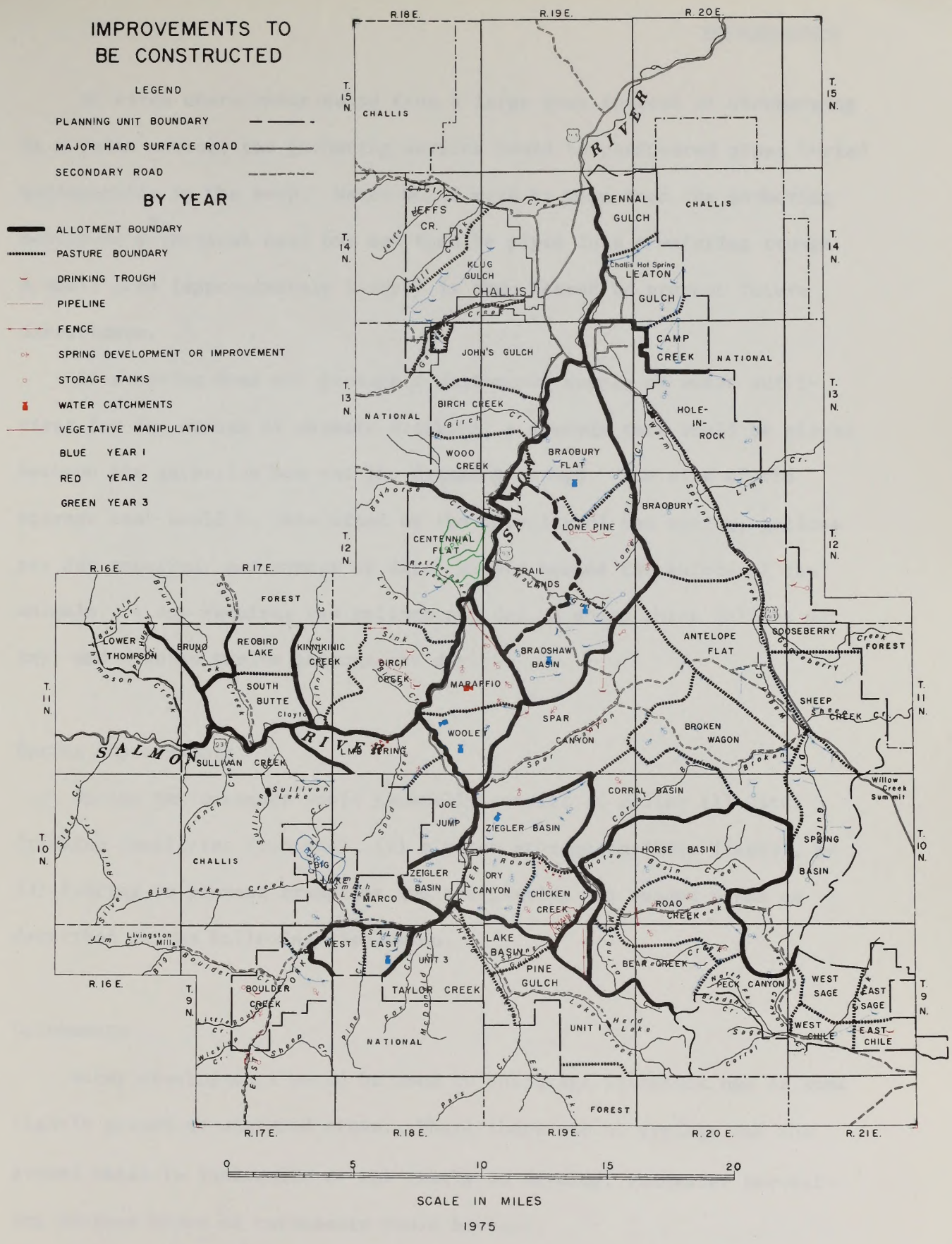


FIGURE 1-1 SPRING DEVELOPMENT UNDER CONSTRUCTION. Backhoe has completed excavation and vertical perforated pipe is in place to act as collection box.



MAP 1-8 PROPOSED LOCATION AND YEAR OF CONSTRUCTION OF PROPOSED RANGE IMPROVEMENTS.

At sites where water seeps from a large area instead of discharging as a point source, the gathering devices would be perforated pipes buried horizontally in the seep. Water would move by pipe from the gathering device to a vertical head box and then be piped into a watering trough. A small area (approximately 1 acre) is then fenced to prevent future disturbance.

If a spring does not produce a continuous supply of water sufficient for the number of animals drinking, a storage tank would be placed between the gathering box and the drinking trough. The size of the storage tank would be determined by the capacity of the spring, gallons per day required, and number of days' supply needed for safety of the animals. A cow requires ten gallons per day, a sheep three gallons per day, and a horse twelve gallons per day.

Spring Improvements

Spring improvements would generally consist of adding (1) water drinking facilities (troughs), (2) a water storage facility (tanks), or (3) fencing to prevent trampling and overgrazing wet meadow areas as described in the following discussion.

Catchments

Water developments would be used to encourage livestock use of some lightly grazed or ungrazed areas. Where there are no springs and the ground water is inadequate or too costly to develop, rainwater harvesting devices known as catchments would be used.

A typical catchment would consist of a watershedding area made of an impervious material designed to collect rainfall (FIGURE 1-2). Water would be piped to a large butyl bag for storage.

FIGURE 1-2 INSTALLING WATERSHEDDING AREA FOR TYPICAL RAINWATER HARVESTING CATCHMENT. Impervious material being laid in place to act as watershedding device.

The bag would be placed in an earthen cradle (pit) dug and shaped with a track-type tractor. The cradle for a 50,000-gallon storage bag, for example, would be less than 150 feet square surrounded by a three-foot-high earthen bank to support and contain the bag.

The size of the watershedding area and storage facility would be determined by average annual rainfall and water requirements. A 100-foot-square watershedding area and nine-inch annual average rainfall, for example, would yield 56,200 gallons of water per year.

A deer- and/or elk-proof fence would be constructed around the watershedding area. Water would be piped from the storage bag to the

drinking facility. The pipeline would require a trench twelve inches deep and approximately twelve inches wide which is normally dug and backfilled by hand.

Pipelines

Pipelines from a spring to a dry area are usually more dependable than catchments, and therefore, would be used whenever possible.

Pipelines are generally 1 1/4-inch diameter plastic pipe buried with a pipelaying device mounted on a tractor as in FIGURE 1-3.

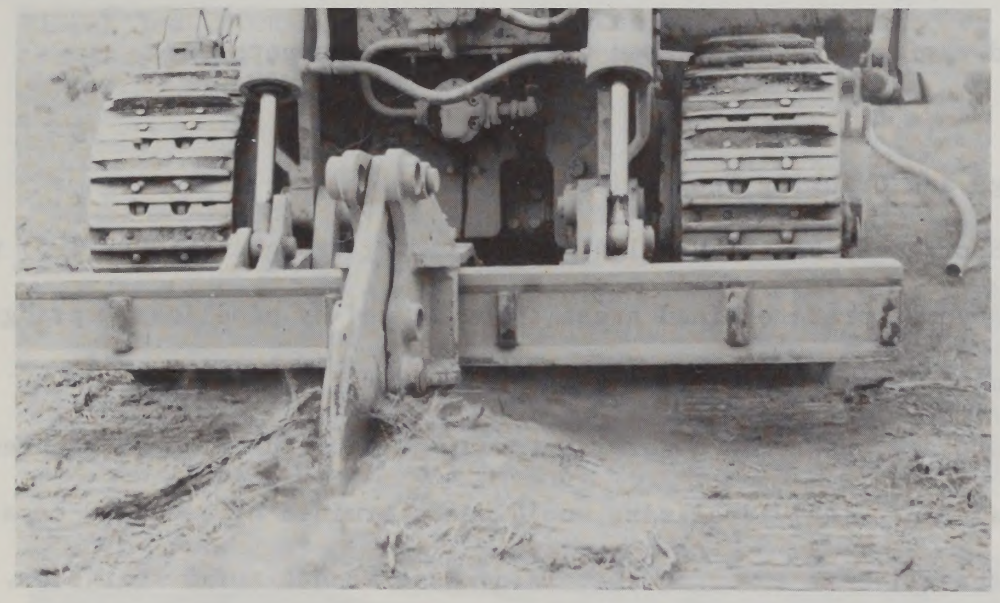


FIGURE 1-3 PIPELAYING OPERATION. A "Ripper tooth" pipelaying device is shown here. Such a device is attached to a tractor for use on national resource lands.

The pipelaying device is a "ripper tooth" less than four inches wide with a forward curve which helps hold the end of the tooth at the desired depth. A pipe of three to four inches in diameter is welded to the backside of the ripper tooth which is curved outward to the tractor.

A pipe roll holder is mounted on the tractor and the pipe is threaded through the backward bent pipe on the ripper tooth.

The end of the plastic pipe would be anchored and the tractor would lower the ripper tooth and move forward with the plastic pipe feeding into the pipelaying pipe. As the tractor moves forward, the earth would settle back around the pipe so that a slight rise of four inches or less with a visible crack of varying widths (generally less than six inches) would be the only remaining disturbance except for the area within the tracks of the tractor.

The pipe is normally laid from nine to eighteen inches under the ground surface depending upon where rock is encountered.

Storage and Drinking Facilities

Storage tanks (FIGURE 1-4) and drinking troughs (FIGURE 1-5) would be placed at predetermined areas to be served by pipelines, springs, or catchments.

Storage tanks are generally round, galvanized metal structures with a metal top. Individual size would be determined by required capacity, but generally are 15 to 30 feet in diameter and 6 to 12 feet high.

Drinking troughs would be rectangular metal boxes approximately four feet wide and twelve to eighteen inches deep. The top edge of the trough is normally less than 24 inches above ground level. Length would be determined by the number of animals expected to use the facility at one point in time. Troughs are generally held steady by a wooden frame attached to wooden posts set at each corner of the trough. Small animal escape ramps would be placed in each water trough.

FIGURE 1-4 STORAGE TANK. The structure shown here insures a steady availability of water from a spring development.

FIGURE 1-5 DRINKING TROUGH. Water from spring developments is piped into structures such as this. Installation of "bird ladders" in troughs is standard procedure.

Fences

Fences (FIGURE 1-6) would be required to keep domestic animals within desired areas.

FIGURE 1-6 WOODEN POST STRETCH PANEL AND GATE IN METAL POST, FOUR-STRAND, BARBED WIRE FENCE. Fences are built in accordance with BLM Manual 1737.3 to insure that wildlife as well as livestock management needs are considered.

Fences would be constructed of either steel or wooden posts at approximately sixteen-foot intervals with twisted wire stays or wooden stays midway between each post. The use of metal posts and stays or wooden posts and stays would depend on the degree of visibility needed for the individual fence or section of fence. Metal material is less visible than wooden material.

The number and spacing of wires on individual fences are dictated by BLM manuals, the type of big game animals present, and the kind of domestic animals to be controlled by the fence. Wire spacing in antelope areas, for example, is designed to allow antelope as much freedom

of movement as possible and still control cattle movement. In some areas, fences can be built far enough up a hillside to discourage most domestic animal movement but still allow wild horse movement around the end.

Cattleguards

Cattleguard (FIGURE 1-7) construction would require excavating a hole approximately 8 feet wide, 12 feet long and 24 inches deep. A precast concrete base would be set into the excavation. The earth would be backfilled and compacted around the outside of the base, leaving a hole in the middle.

A metal grid with openings large enough to deter animals from walking across, but close enough to allow vehicles to drive over, would be set onto the base. It would be held in place by a lip of the base or bolted to the base.

Where cattleguards are constructed, a gate would be placed on one side of the cattleguard to allow movement of livestock through the fence. Adjacent gates would allow passage of extremely heavy or wide loads. The cattleguards would be built with 15- to 20-ton load limits.

FIGURE 1-7 CATTLEGUARD. This view shows the metal grid to deter livestock and the bypass gate for heavy equipment crossing. Cattleguards are placed at fence crossings which are heavily utilized by traffic.

Burning

Approximately 600 acres would be burned in the fall (FIGURE 1-8). The first step in burning operations would be to establish a 50-foot-wide firebreak around the area to be burned. This would be accomplished by spreading a fire retardant on, or water soaking, two 20-foot-wide strips around the perimeter of the treatment site. Between the strips a 50-foot zone would remain intact. After fireproofing the strips, the 50-foot zone would be burned to establish the firebreak.

Later, when weather conditions permitted, backfires would be set adjacent to the downwind side of the firebreak to burn out the enclosed area. Firefighting equipment would be available at the site to minimize danger of fires escaping. It is estimated that the burning operation could be accomplished within a one-week period.

FIGURE 1-8 PRESCRIBED BURN AREA. Burning completely removes vegetation from an area so that it may be reseeded to a more desirable species.

Chaining

Six hundred acres of sagebrush-grass vegetative type within the Road Creek Allotment would be chained in the fall using two track-type tractors moving parallel approximately 100 to 200 feet apart, dragging a 200- to 600-foot-long anchor chain behind in a U or J configuration as in FIGURE 1-9.

The area would be seeded with suitable grasses, forbs, and browse for wildlife. The seed would be sown on the area from aircraft. The area would then be chained with an Ely-type chain as described above. The chain would cover the seed with earth as it dragged over the area. Assuming 200 acres could be chained and seeded per day, the operation would take 3 days.

FIGURE 1-9 CHAINING OPERATION. A U-type formation in chaining of sagebrush-grass area is used to clear the ground for reseeding with grasses, forbs, and browse for wildlife.

Aerial Spraying

One thousand acres of sagebrush-grass vegetative type within the Bald Mountain Allotment would be aerially sprayed with the herbicide 2,4-D in an oil-water emulsion during spring green-up.

The oil-water-chemical emulsion would be helicoptered to the spray site and applied as a fine mist as in FIGURE 1-10. Flagmen would guide the pilot over several linear flight paths, leaving unsprayed strips of sagebrush, where appropriate, by moving across a wider area than the helicopter could cover in each swath. It is estimated that the spraying operation would take one week.

FIGURE 1-10 AERIAL SPRAYING OF SAGEBRUSH. Helicopter spraying sagebrush-grass vegetation along carefully designated route. Unsprayed strips are left to protect adjacent areas.

Stock Trails

Proposed stock trails would be constructed with a track-type tractor, along lines flagged on the ground by an engineer, to the grade and width desired. Stock trails are generally about twelve feet wide, and placed on grades to facilitate movement of domestic livestock over steep or rocky terrain.

INTERRELATIONSHIPS

Bureau of Land Management Programs

In 1964, the Bureau of Land Management (BLM) started developing a planning process to better determine which land use, or combination of land uses, can take place on an area. After a period of design and testing, the BLM planning system was adopted and implemented in July, 1969. This system is presently being used to develop and maintain land use plans which consider all of the various resource uses for all national resource lands (NRL).

In brief, the system works as follows (for detail refer to BLM Manuals 1601-1608). The first step in the procedure is to delineate the BLM-administered land into geographical areas called planning units. These units serve as the basis for collection and analysis of basic resource inventory data compiled in documents called unit resource analyses (URA). Each URA includes a description of the existing environment of the planning unit, a physical inventory of individual resources (lands, minerals, livestock forage, forestry, recreation, wildlife, watershed), and an analysis of the resource production opportunities without multiple-use consideration.

After URAs are completed, a management framework plan (MFP) is prepared for a planning area, which may cover one or more planning units. The MFP provides a set of goals, objectives, and constraints for a specific planning area to guide the development of detailed plans for the management of each resource. It is prepared using an interdisciplinary approach at the field level by BLM employees.

The URA for the Challis Planning Unit was completed in 1968, and the MFP was completed in 1974, following revisions of the URA. These documents are on file in the Salmon District Office.

Therefore, the BLM planning system is composed of three major components: (1) URA, (2) MFP, and (3) various activity plans, which are developed in that order.

The proposed action in this environmental impact statement (EIS) represents the activity plan for domestic livestock grazing for the area.

As this proposed action was developed, consideration was given to various recommendations in the unit MFP, including those for bighorn sheep; water developments for better livestock use and distribution; coordination of BLM grazing systems with Forest Service brush control on East Fork and Bald Mountain Allotments; provision of winter forage for deer, elk and antelope; and provision of habitat for upland game birds.

A second activity plan for the area is a draft wild horse and burro management plan which should be finalized and circulated for public review in early 1976. This plan recommends the wild horse and burro herd of the Challis Planning Unit be managed for a minimum of 150 animals and a maximum of 300 animals. This recommendation was utilized as an assumption to guide impact analysis.

Another activity plan - a wildlife habitat management plan - is currently anticipated for the Challis Planning Unit. Extensive wildlife input was incorporated into the proposed action of this EIS. If implemented, it is anticipated that only localized, minor adjustments would result from the subsequent adoption of a separate wildlife habitat management plan.

Other Federal Programs

The Herd Creek Allotment Management Plan (AMP), which just completed its first year of operation, is a joint plan with the Forest Service.

If grazing patterns on National Forest lands contiguous to the Challis Unit are altered as a result of the National Park Service Sawtooth National Recreation Area study now underway, four permittees could be affected.

State Programs

In 1975, Idaho Department of Health and Welfare (IDHW) contracted for an inventory of all federal, state, and local programs having nonpoint source pollution implications. The department indicates the status of the main Salmon and East Fork Rivers within the Challis Unit as not polluted or to be cleaned up under present abatement programs.

All wildlife within the Challis Unit is managed by the Idaho Department of Fish and Game. The BLM assumes the responsibility for managing habitat. The proposed action would affect many wildlife species, necessitating close coordination between the two agencies.

Private Programs

The proposed Tuscarora Mine and associated mill operations would significantly reduce the available animal unit months (AUMs) of forage in the Bruno Creek Allotment, which could necessitate a revision of this proposed AMP. For more detailed information, refer to mineral discussion in Chapter II.

The proposed NL Industries fluorspar milling operation on Bradbury Flat could require revision of the proposed AMP.

ASSUMPTIONS AND ANALYSIS GUIDELINES

(1) The demand for meat production will increase in future years.

(2) The proposed Allotment Management Plans (AMPs) will be implemented over the five-year period following completion of the final impact statement.

(3) The Bureau of Land Management (BLM) will fund the improvements required to implement the proposed action, and do so within the stated time frame.

(4) The necessary manpower will be furnished by and to the Salmon District and a rigorous effort will be made to completely carry out the studies and monitoring program recommended in the AMPs.

(5) Wild horse numbers will be held within 150-300 as established in the wild horse plan developed by the Salmon District.

(6) In addition to the improvements described in the proposed action, the following existing improvements will be maintained in serviceable condition:

Spring developments	65
Pipelines	12.92 miles
Reservoirs	40
Wells	3
Fences	73.7 miles
Cattleguards	17
Exclosures	4
Sagebrush spraying	1,530 acres
Grass seeding	142 acres

The proposed NL Industries fluorspar milling operation on Bradbury Flat could require revision of the proposed AMP.

ASSUMPTIONS AND ANALYSIS GUIDELINES

(1) The demand for meat production will increase in future years.

(2) The proposed Allotment Management Plans (AMPs) will be implemented over the five-year period following completion of the final impact statement.

(3) The Bureau of Land Management (BLM) will fund the improvements required to implement the proposed action, and do so within the stated time frame.

(4) The necessary manpower will be furnished by and to the Salmon District and a rigorous effort will be made to completely carry out the studies and monitoring program recommended in the AMPs.

(5) Wild horse numbers will be held within 150-300 as established in the wild horse plan developed by the Salmon District.

(6) In addition to the improvements described in the proposed action, the following existing improvements will be maintained in serviceable condition:

Spring developments	65
Pipelines	12.92 miles
Reservoirs	40
Wells	3
Fences	73.7 miles
Cattleguards	17
Exclosures	4
Sagebrush spraying	1,530 acres
Grass seeding	142 acres

Bitterbrush seeding	60 acres
Stock trails	19.2 miles
Detention dams	4

CHAPTER 2

DESCRIPTION OF THE ENVIRONMENT

EXISTING ENVIRONMENT

The following sections describe the environment of the Challis Unit as it is today. Where pertinent, environmental components are described within the context of the proposed allotments to enable the reader to track the expected impacts of implementing the proposed actions.

CLIMATE

General

The air flow controlling weather in the Challis Planning Unit is predominately westerly. The high Salmon River range to the west, and the White Cloud Peaks, Pioneer and Sawtooth Ranges to the southwest, tend to shelter lower elevations from both winds and precipitation.

Summer weather is characterized by clear conditions during most of each day, with cumulus clouds common in the late afternoons and evenings. There are infrequent severe thunderstorms. Relative humidity is low, usually 25% or less. Fog conditions rarely occur.

Winter days are usually clear or partly cloudy. Stormy conditions are infrequent and of short duration. Fog occurs infrequently because relative humidity stays low.

Specific

Precipitation

Lower elevations of the Challis Unit (5,000 to 6,000 feet) are dry. The average annual precipitation, measured at Challis over a 30-year period, was 6.93 inches.

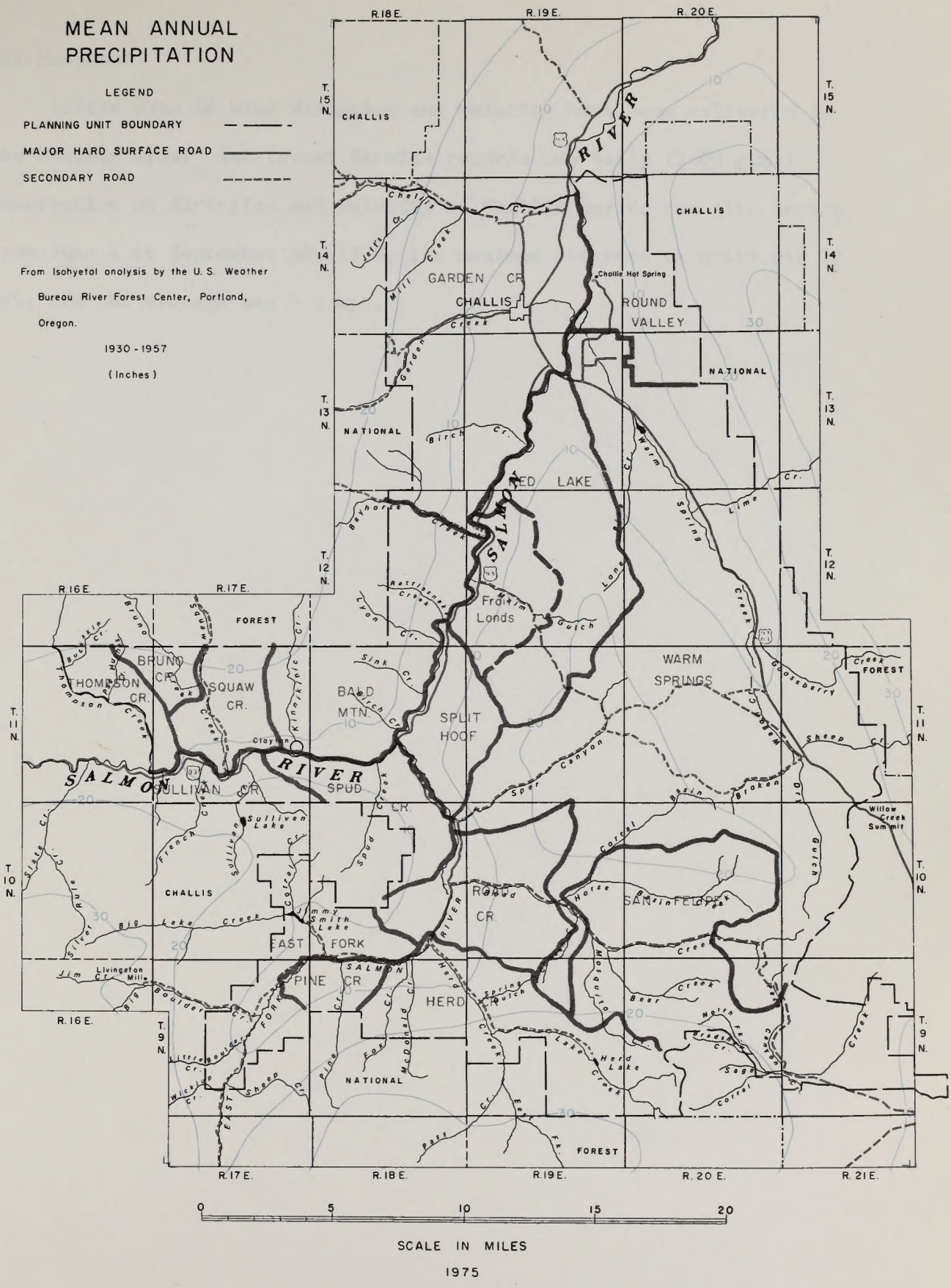
In most areas where domestic livestock use predominates, annual precipitation ranges from approximately seven to sixteen inches per year with a mean of approximately twelve inches. MAP 2-1 shows mean annual precipitation based on U.S. Weather Service records.

Approximately three cloudbursts which would cause severe runoff occur in the unit each year, each deluging an estimated three square miles. Assuming nine square miles would be affected on the average each year, each square mile of the 540-square-mile unit would experience a cloudburst once every 60 years.

Temperature

The average annual temperature at Challis is 44.1°F. The record mean monthly maximum temperature of 85.5°F was recorded in July. Frost-free days are common at lower elevations from late May to mid-September.

APPENDIX 2-A contains mean monthly and mean monthly maximum temperature data for the Challis area.



MAP 2-1 ISOHYETAL MAP OF CHALLIS UNIT

Lines connect areas of equal precipitation.

Air Movement

Little data on wind direction and velocity have been collected in the Challis area. The Forest Service records one daily (2:00 p.m.) observation of direction and velocity at Challis during the fire season. From June 1 to September 30, 1975, the maximum observed velocity was 22 mph, and the average was 5.1 mph.

AIR QUALITY

There are no air quality monitoring stations in or near the Challis Unit. From casual observation, air quality is apparently excellent. Because the unit is isolated from industrial centers, there is rarely if ever evidence of industrial smoke or haze. On rare occasions there is smoke from controlled burning of slash, or forest or range fires. Controlled burning is permitted under criteria defined by state and federal regulations.

GEOLOGY & TOPOGRAPHY

The two basic types of rock formations in the Challis Unit are Tertiary volcanics and Paleozoic sediments. Ross (1937) described the features indicated on MAP 2-2.

Elevations within the unit range from 4,824 feet at the northern boundary to 10,015 feet at the summit of Jerry Peak near the southern boundary (MAP 2-3).

Lands in the vicinity of Challis are moderately incised and gently to steeply rolling. South of Challis, the Salmon and the East Fork River valleys are quite narrowly confined within steep, rocky mountainsides. At higher elevations, the slopes moderate and less rock is exposed.

A long ridge extends southerly through the unit, rising abruptly west of Bradbury and Antelope Flats to elevations of 9,652 feet on Lone Pine Peak and 9,340 feet on Anderson Peak. Below and to the west of this ridge is a series of drainage basins characterized by broad, smooth ridges and moderate slopes. Most of the area is mountainous. Exceptions include the flat to gently sloping valley of Warm Springs Creek and Thousand Springs Valley in the southeast portion of the unit.

The unit lies within the area termed "complex mountains." The Idaho Batholith may have fostered the extensive activity that is evident throughout the unit. Stratifications occur at all elevations, indicating an ancient lake once occupied the area. Anticlines and synclines are evident.

MINERAL RESOURCES

The Clayton Silver Mine on Kinnikinic Creek is the only metal mine operating in the Challis Unit.

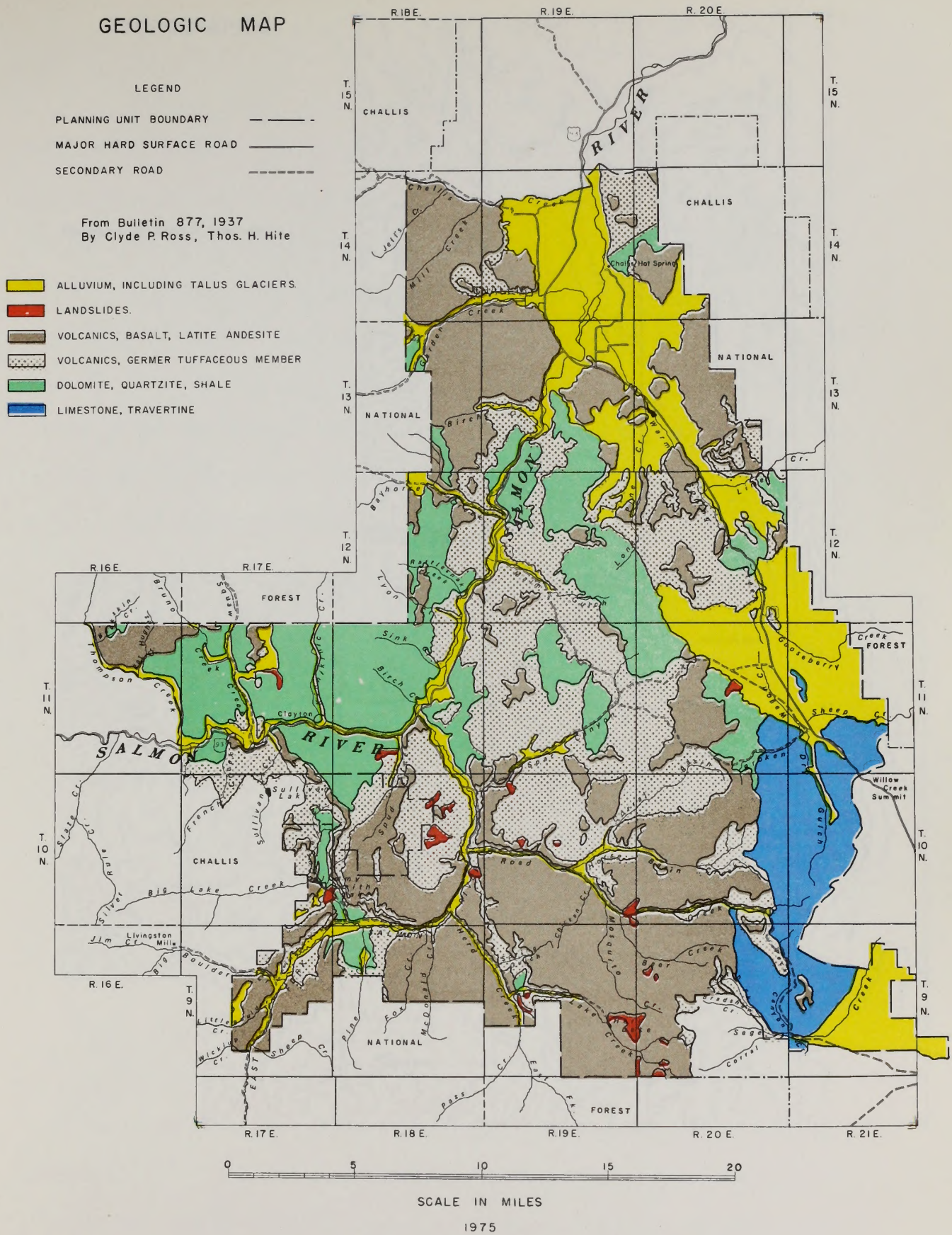
In the past, underground metal mines on Big Boulder Creek, Thompson Creek, Buckskin Creek, Squaw Creek, Bayhorse Creek, and on Poverty Flat, produced silver, lead, gold, copper, and tungsten.

Tuscarora Mining Company, a subsidiary of Cyprus Mining Company, has been doing exploration work on a molybdenum deposit situated between Pat Hughes and Buckskin Creeks (Thompson Creek Project). The mill would be on the divide between Thompson and Bruno Creek drainages. Waste would be deposited into Buckskin and Pat Hughes drainages, and mill tailings would be ponded in a segment of the Bruno Creek drainage.

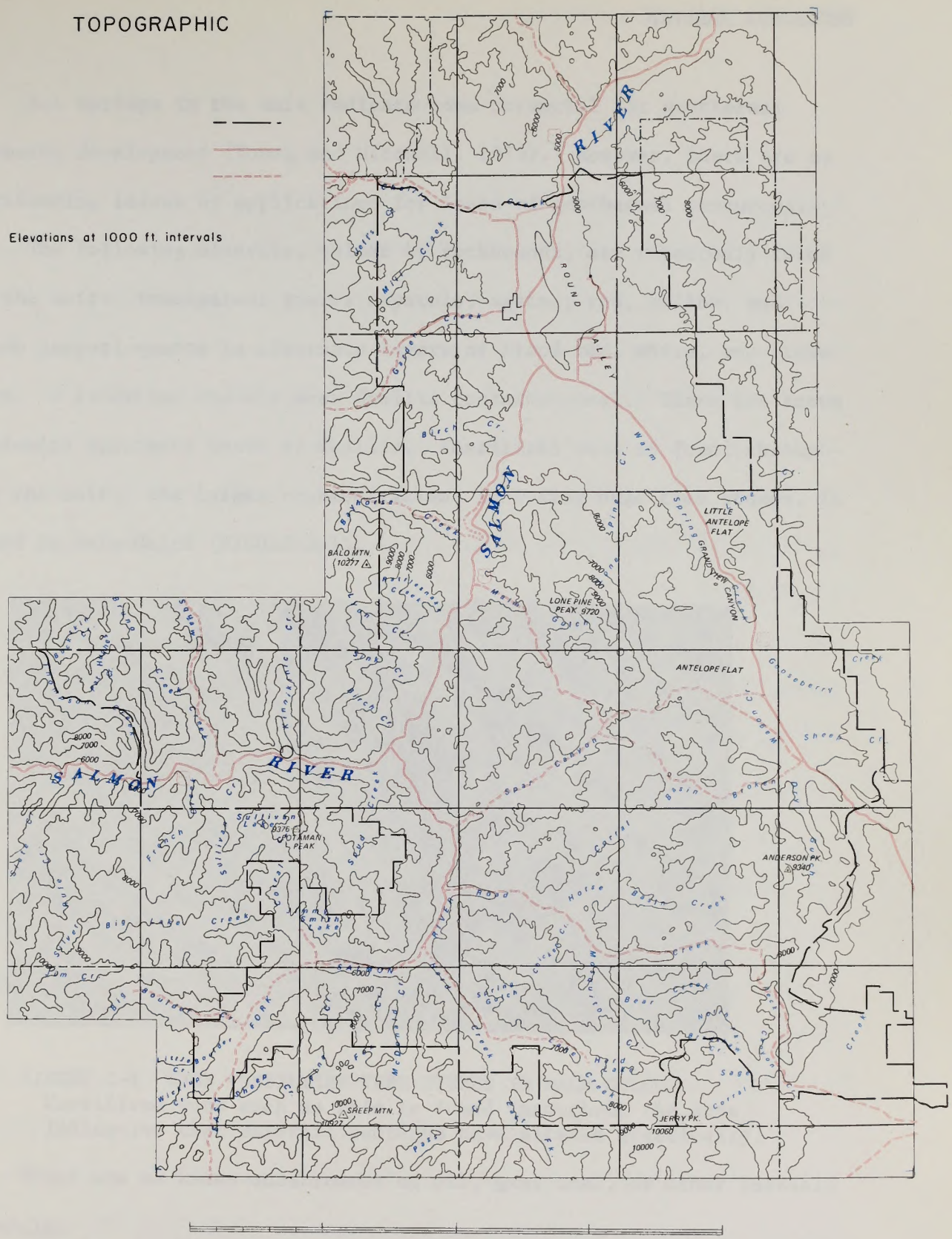
Showings of fluorspar have been found on Garden Creek on both sides of the Challis National Forest boundary. Exploration is continuing. Plans have been formulated to open an underground mine and transport the ore to a mill to be constructed on Bradbury Flat south of Challis.

There is an abundance of limestone in the unit. In the past, small quantities were mined from the hillside on the west edge of Bradbury Flat and treated in nearby lime kilns for use in wall plaster.

From recorded notices of assessment work on unpatented mining claims, approximately 1,000 claims are actively held in the unit. A precise figure cannot be ascertained because many descriptions are vague.



MAP 2-2 MAJOR GEOLOGIC FEATURES OF THE CHALLIS UNIT.



MAP 2-3 TOPOGRAPHY OF THE CHALLIS UNIT.

Hot springs in the unit indicate some potential for geothermal resource development (Young and Mitchell, 1973). However, there are no outstanding leases or applications for lease of geothermal resources.

The following minerals, valued by rockhounds, are reportedly found in the unit: transparent quartz crystals; agates; red, yellow, and green jasper; quartz in alternate layers of blood red, white, and brown onyx. A limestone deposit near Challis contains coral. There are known mondenite specimens south of Challis. Fossilized wood is found throughout the unit. The largest concentration, including huge tree stumps, is found in Malm Gulch (FIGURE 2-1).

FIGURE 2-1 HUGE FOSSILIZED TREE STUMPS IN MALM GULCH.
Fossilized wood such as this is found throughout the area, indicative that rainfall patterns have altered drastically.

There are no known occurrences of oil, gas, coal, or other leasable minerals.

The widespread alluvial deposits in the unit contain an abundance of sand and gravel satisfactory for construction uses.

SOIL AND WATER RESOURCES

General

Soils of the Challis Unit other than alluvial (deposited by running water) are mostly residual (developed in place), formed from weathered sedimentary bedrock (dolomite limestone, quartzite, and argillites) and the Challis volcanics (Germer tuffaceous material and basalt).

On gently rolling uplands (0-30% slope), slightly altered bedrock is usually not more than 36 inches below the surface. On more rolling lands (20-50% slope), the depth to bedrock is about 10-30 inches. On steep slopes (30-60%), less than 10 inches of soil or soil material overlie partly weathered bedrock. Rock outcrops are common on the steeper slopes.

On steeper slopes (60+%), little or no soil development has taken place due to geologic erosion.

Alluvial soils are developed from a variety of material washed from the uplands and high landscapes and redeposited along stream courses. They occupy the comparatively narrow, elongated, continuous or broken strips along most of the main drainages. Soluble salts are present in varying quantities in most of these soils.

Management problems associated with soils of the Challis Unit are strongly related to the climate and geologic setting. This relationship radiates from soils having relief and physical properties favorable to absorption of nearly all the low precipitation of the area except for the occasional cloudburst. Although present vegetation is sparse due to

a short growing season and distribution of effective moisture, the productive capacity ranges from 100 pounds per acre on rough, broken lands, to 3,000 pounds per acre on wet meadow lands.

A problem of overland flow and sediment transportation into streams is pronounced during periods of intense thunderstorms in the unit.

Soil compaction is a universal process associated with any use of forest or rangelands. It is not possible to do more than generalize about the influence of soil compaction and the factors affecting it. In the few studies that have been made, the wide range of soils and cover conditions, and differences in research procedures have produced variable results.

MAP 2-4 was prepared from geologic and topographic maps. It shows the location and relative extent of five major soil associations within the Challis Unit. The major soils within each association are listed in TABLE 2-1.

TABLE 2-1 is organized to show characteristics and some interpretations of soils representing dominant and contrasting soils in each association.

The "Percentage of Association" column indicates the extent of each soil in an association. Totals less than 100% result from inclusions of other soils and land types. For example, categories in soil association A total 85%. Knowledge of this area is somewhat limited, so 15% of the area consists of undefined soils.

TABLE 2-1

DESCRIPTION OF MAJOR SOIL ASSOCIATIONS WITHIN CHALLIS UNIT

Symbol	Great Group or Subgroup	Family	Percent of Association	Position on Landscape	Parent Material	Texture: Surface	Texture: Subsoil	Profile Depth	Permeability 1/	Average Waterholding Capacity 2/	Major Soil Problems	Susceptibility
A	Xeric Torriorthents	Loamy skeletal, Carbonatic Frigid	30	Fans & Terraces	Alluvium Over Outwash	Loam	Very Gravelly Loam	6-10" Over Gravel	Very Rapid	Low	Droughtiness Erosion	Moderate
	Mollic Haplargids	Fine-silty, Mixed, Frigid	30	Terraces	Alluvium Over Outwash	Silt-Loam	Gravelly Silty-Clay Loam	10-20" Over Gravel	Rapid	Low	Droughtiness Erosion	Moderate
	Typic Haplargids	Fine-loamy Mixed, Frigid	20	Fans & Terraces	Alluvium Over Outwash	Loam	Gravelly Clay Loam	20-30" Over Gravel	Rapid	Low	Droughtiness Erosion	Moderate
	Typic Haplaquolls	Fine-loamy Mixed, Calcareous, Frigid	5	Flood Plains	Alluvium Over Outwash	Loam	Loam	20-40" Over Gravel & Sand	Rapid	Medium	Wetness	Moderate
B	Lithic Argixerolls	Fine loamy, Mixed, Frigid	20	Mountain Tops & Ridges	Sedimentary Rock (Limestone)	Stony Loam	Stony Clay Loam	5-20" Over Bedrock	Moderately Slow	Low	Shallow Over Bedrock Stoney & Gravelly Profile Droughtiness Steep Slopes	Moderate
	Typic Argixerolls	Fine loamy, Mixed, Grigid	35	Mountain Side-Slopes	Sedimentary Rock (Limestone)	Stony Loam	Cobbly Clay Loam	20-40" Over Bedrock	Moderately Slow	Medium	Droughtiness Erosion Steep Slopes	Severe
	Mollic Haploxeralfs	Loamy, Mixed Frigid	25	Mountainous Mostly North Slope	Sedimentary Rock (Limestone)	Loam-Stony Loam	Stony Loam	10-60" Over Bedrock	Moderate	Low to High	Erosion Steep Slopes	Severe
	Rockland	-	15	Upland Steep Mountainous	Sedimentary	-	-	Outcrops & Less than 5"	-	Low	Steep Slopes Shallow	Slight
C	Typic Argixerolls	Fine loamy Mixed, Frigid	30	Mountain Side-Slopes	Challis Volcanics	Stony Loam	Stony Clay Loam	20-40" Over Bedrock	Moderate to Moderately & Low	Medium to High	Erosion Steep Slopes	Severe
	Lithic Argixerolls	Fine loamy Mixed, Frigid	25	Mountain Tops & Ridges	Challis Volcanics	Stony Loam	Stony Clay Loam	5-20" Over Bedrock	Moderately Slow	Low	Shallow Over Bedrock Stoney & Gravelly Profile Droughtiness Steep Slopes	Moderate
	Typic Xerorthents	Loamy, Mixed Frigid	15	Side-slopes & Fans	Colluvial Alluvial Material	Loam	Loam	20-60"+ Over Bedrock	Moderate	Medium to High	Erosion	Severe
	Mollic Haploxeralfs	Loamy, Mixed Frigid	5	Mountainous Mostly N. Slopes	Challis Volcanics	Loam-Stony Loam	Stony Loam	10-60" Over Bedrock	Moderate	Low to High	Erosion Steep Slopes	Severe
	Rockland-Talus	-	15	Upland Steep Mountainous	Challis Volcanics	-	-	Outcrops & Less than 5"	-	Low	Shallow Steep Slopes	Slight

TABLE 2-1 (cont.)

DESCRIPTION OF MAJOR SOIL ASSOCIATIONS WITHIN CHALLIS UNIT

Symbol	Great Group or Subgroup	Family	Percent of Association	Position on Landscape	Parent Material	Texture: Surface	Texture: Subsoil	Profile Depth	Permeability 1/	Average Waterholding Capacity 2/	Major Soil Problems	Susceptibility
D	Typic Xerorthents	Loamy, Mixed Frigid	50	Mountain Side-Slopes	Challis Volcanics Tuffaceous	Loam	Loam	10-60" Over Bedrock	Moderately Slow to Slow	Low to High	Erosion Steep Slopes	Severe
	Lithic Xerorthents	Loamy, Mixed Frigid	15	Mountain & Ridge Tops	Challis Volcanics	Stony Loam	Stony Loam	5-20" Over Bedrock	Moderately Slow to Slow	Low	Shallow Over Bedrock Stoniness Steep Slopes	Severe
	Typic Argixerolls	Fine loamy, Mixed, Frigid	20	Upland Moderate Slopes	Challis Volcanics	Loam	Clay Loam	20-60" Over Bedrock	Moderately Slow to Slow	Medium to High	Erosion	Severe
	Lithic Argixerolls	Fine loamy Mixed, Frigid	10	Mountainous Upland	Challis Volcanics	Stony Loam	Stony Clay Loam	5-20" Over Bedrock	Moderately Slow to Slow	Low	Shallow Over Bedrock Stoniness Steep Slopes	Severe
E	Mollic Haploxeralfs	Loamy, Mixed, Frigid	25	Mountains	Quartzites and Argillites	Loam-Stony Loam	Stony Loam	10-60" Over Bedrock	Moderate	Low to High	Steep Slopes Erosion	Severe
	Typic Xerorthents	Loamy, Mixed, Frigid	25	Mountain Side-Slopes	Quartzites and Argillites	Loams	Loams	20-30" Over Bedrock	Moderate	Medium to High	Steep Slopes Erosion	Severe
	Lithic Argixerolls	Fine Loamy Mixed, Frigid	25	Mountains	Quartzites and Argillites	Loams	Stony Clay Loams	5-20" Over Bedrock	Moderately Slow to Slow	Low	Erosion Steep Slopes	Severe
	Rockland-Talus	-	20	Upland Steep Mountainous	Quartzites and Argillites	-	-	Outcrops & Less than 5"	-	Low	Shallow Steep Slopes	Slight

1/ Rapid : 7.5 - 10 inches per hour
Moderately Rapid : 5.0 - 7.5 inches per hour
Moderate : 2.5 - 5.0 inches per hour
Moderately Slow : 0.8 - 2.5 inches per hour
Slow : 0.2 - 0.8 inches per hour

2/ Terms listed for total available water holding capacity are:

Low : Less than 4.0 inches in profile
Medium : 4.0 - 8.0 inches
High : More than 8.0 inches in profile

Erosion susceptibility was developed by considering slope, parent material, soil texture, and use of the assumption that the soils were free of vegetation. Terms used for erosion susceptibility are "slight," "moderate," and "severe."

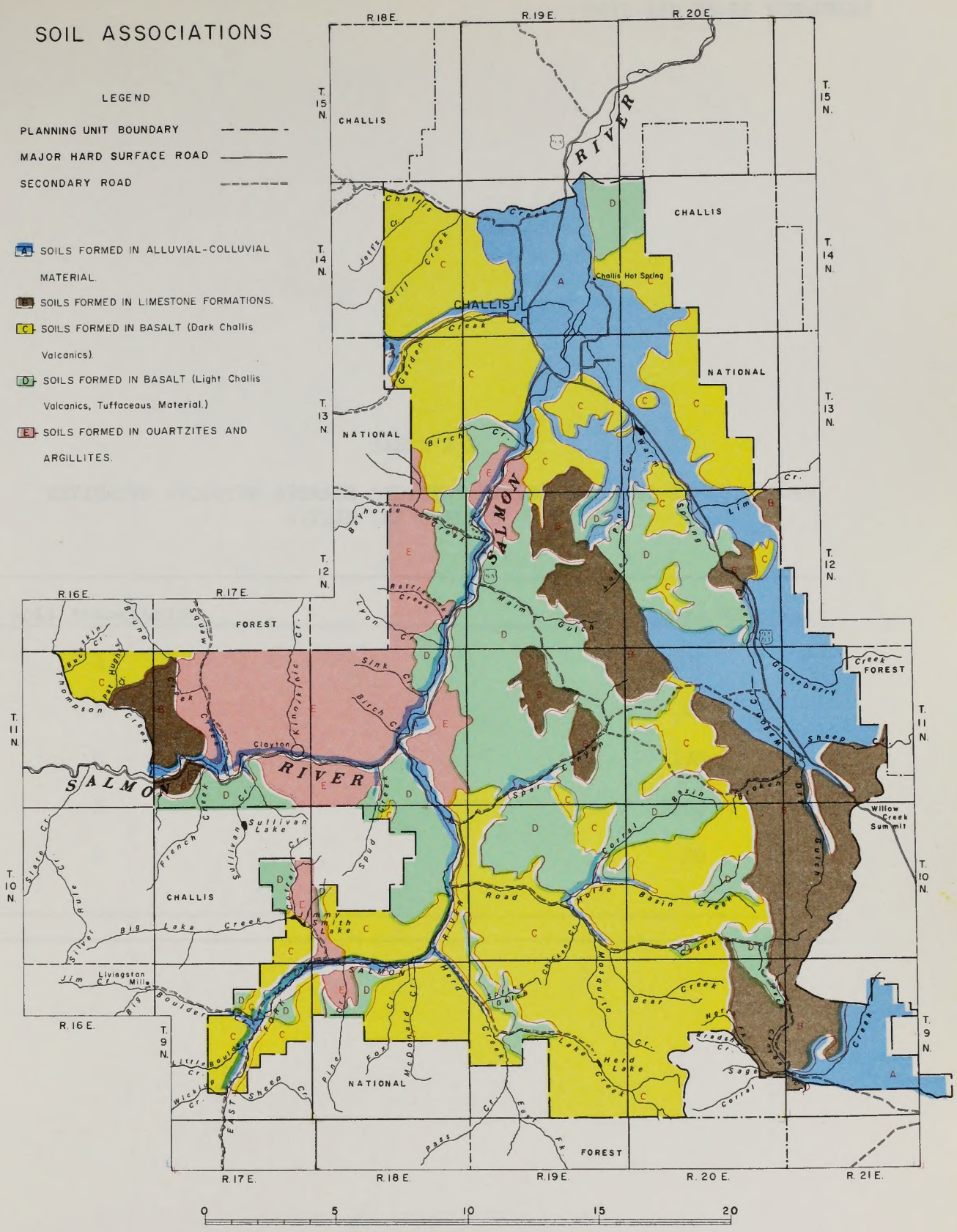
Sediment loss figures are not available for the Challis area. Sediment yield for each soil association (TABLE 2-2) was estimated by using information from "Evaluation of Sediment Yields Within Challis Planning Unit" (Seitz, 1975) and soil association data.

TABLE 2-3 shows the acreage of each soil association by allotment. Total productive acres do not include acres classified as unsuitable for livestock grazing or those within the conifer vegetative type.

TABLE 2-4 displays the present consumptive use of forage within the Challis Unit, indicating the effect on total ground cover resulting from both live plants and plant litter.

The production capability of each proposed allotment is displayed as present available AUMs. This was calculated by using Soil Conservation Service range site information thought to be applicable to the Challis Unit. Present and potential production were calculated by determining the production capability in total pounds of forage for each soil, vegetative type, and condition class (poor, fair, and good).

Total pounds of forage were converted to AUMs by determining the percentage of the total production usable in the vegetative type by condition class.



MAP 2-4 MAJOR SOIL ASSOCIATIONS WITHIN THE CHALLIS UNIT.

TABLE 2-2

ESTIMATED WEIGHTED AVERAGE SEDIMENT YIELDS FOR SOIL ASSOCIATIONS WITHIN THE CHALLIS UNIT

Soil Association	Tons/Square Mile/Year
A	200
B	40
C	170
D	1200
E	20

TABLE 2-3

SOIL ASSOCIATION ACREAGE BY PROPOSED ALLOTMENT WITHIN THE CHALLIS UNIT

Allotment	A	% 1/	B	% 1/	C	% 1/	D	% 1/	E	% 1/	Total	Total Prod. Acres
Red Lake	1,514	6	9,596	38	5,098	20	8,184	32	940	4	25,332	16,496
Herd Creek	794	3	0	0	22,089	90	1,805	7	0	0	24,688	17,808
Road Creek	172	1	0	0	10,820	68	5,082	31	0	0	16,074	14,078
Bruno Creek	670	27	0	0	776	32	1,007	41	0	0	2,453	274
Round Valley	3,433	26	0	0	5,884	43	4,266	31	0	0	13,583	12,879
San Felipe	2,058	7	3,668	12	22,171	74	2,110	7	0	0	30,007	22,295
San Felipe 4 Past.	6,724	59	4,604	41	0	0	0	0	0	0	11,328	11,120
Warm Springs												
Area I	16,554	53	2,684	8	7,422	23	5,036	16	0	0	31,696	30,298
Area II	14,818	37	6,168	16	2,130	5	16,668	42	0	0	39,784	20,836
Area III	756	2	15,199	40	4,774	13	16,932	45	0	0	37,661	32,816
Garden Creek												
North	1,120	9	0	0	11,674	91	0	0	0	0	12,794	12,150
South	100	1	0	0	13,490	73	2,728	15	2,110	11	18,423	13,878
Hillside	0	0	0	0	416	100	0	0	0	0	416	224
Bald Mountain	130	1	0	0	0	0	3,608	14	21,023	8	24,761	15,417
Thompson Creek	80	2	2,359	40	2,870	49	526	9	0	0	5,835	1,499
Split Hoof	692	7	0	0	0	0	5,193	54	3,770	39	9,655	6,055
Squaw Creek	30	1	708	8	0	0	0	0	8,082	91	8,820	5,940
Spud Creek	150	1	0	0	660	7	5,638	60	2,978	32	9,426	7,154
Pine Creek	438	10	0	0	1,992	47	994	23	870	20	4,294	3,718
East Fork	190	1	0	0	11,418	76	1,590	11	1,802	12	15,000	11,016
Sullivan Creek	0	0	600	12	0	0	3,115	63	1,230	25	4,945	3,575
Malm Gulch												
Frail Area	0	0	850	8	0	0	9,384	87	550	5	10,784	0
Totals	50,423		46,436		123,684		93,866		43,355		357,764	273,422

1/ The percent column is the percent of the total acres within the allotment.

TABLE 2-4

PRESENT CONSUMPTIVE USE OF FORAGE BY ALLOTMENTS IN THE CHALLIS UNIT

Allotment	6 Yr. Avg. Livestock Use AUMs	Wild Horse Use AUMs	Deer Use AUMs	Elk Use AUMs	Antelope Use AUMs	Bighorn Sheep Use AUMs	PRESENT USE Total Obligated AUMs	Range 1/ Survey AUMs	Present 2/ Available AUMs
Red Lake	1,092	1,046	559		240		2,937	1,243	1,006
Herd Creek	1,222		340	49	73		1,684	3,469 3/	1,848
Road Creek	582	431	325		144	13	1,495	838	1,004
Bruno Creek	125		115				240	120	8
Round Valley	373		131		150		654	603	1,403
San Felipe/Peck	3,287	1,415	394	120	480		5,696	3,735	5,316
Warm Springs	7,382	2,460	878	514	1,440		12,674	9,370	11,367
Garden Creek	930		586		72	39	1,627	1,117	2,287
Bald Mountain	617		577				1,194	1,029	1,084
Thompson Creek	140		222				362	178	196
Split Hoof	186	554	290		120		1,150	429	733
Squaw Creek	468		233				701	350	573
Spud Creek	250		239	65	144		698	291	523
Pine Creek	181		144				325	225	447
East Fork	503		405		96	88	1,092	630	1,925
Sullivan Creek	88		86				174	147	122
Total	17,426	5,906 4/	5,524	748	2,959	140	32,703	20,305	29,842

1/ AUMs by range survey made in 1951 and 1957. Livestock AUMs only.

2/ Range site and condition survey compilation using present available information in 1975. Total forage available for all animals.

3/ Forest Service is included. This is not included in total at bottom of page.

4/ 246 AUMs use in Malm Gulch is not added in.

Assumptions were that all nonsuitable grazing land was delineated, that water was available for livestock in the rest of the area, and all coniferous type was unusable.

Based on an annual average of fifteen inches of precipitation, approximately 440,000 acre-feet of water are annually deposited on the Challis Unit.

There are 47 perennial streams and 12 major intermittent streams within the unit (TABLE 2-5 & MAP 2-5). Streamflows exhibit marked seasonal variations, with highest flows occurring during the May-June period and originating as snowmelt. Total dissolved solids seemingly are inverse to flow, and concentrations of suspended solids appear directly proportional to flow (FIGURE 2-2).

There are numerous springs and two naturally formed lakes (Jimmy Smith Lake and Herd Lake) within the unit (MAP 2-5). There are approximately 40 man-made earthen reservoirs within the unit, none of which retains water for more than a few months at any one time.

In general, water quality is considered to be outstanding in the Challis Unit area. Deviations in quality can be related to the geology, topography, and to a certain extent, man.

Surface water quality in Custer County is considered to be superior to most waters in the state. Widespread water quality degradation has not occurred, primarily due to the lack of large population centers and industry.

TABLE 2-6 contains an estimate of the present consumptive water requirement of large wild and domestic animals within the Challis Unit.

TABLE 2-5

STREAMS WITHIN THE CHALLIS UNIT

Stream	Perennial (P) or Intermittent (I)	Tributary to	Gaging Data Available	Originates Within Unit
Salmon River	P	Snake River	X	
East Fork of the Salmon River	P	Salmon River	X	
Spud Creek	P	"		
Sullivan Creek	P	"		
French Creek	P	"		
Spring Creek	P	"		
Challis Creek	P	"	X	
Garden Creek	P	"	X	
Birch Creek (North)	P	"	X	X
Birch Creek (South)	P	"	X	X
Bayhorse Creek	P	"	X	X
Centennial Creek	P	"		X
Sink Creek	I	"		X
Rattlesnake Creek	I	"		
Lyon Creek	P	"	X	
Kinnikinic Creek	P	"	X	
Malm Gulch	I	"		X
Squaw Creek	P	"	X	
Thompson Creek	P	"	X	
Warm Springs Creek	I	"		X
Wickiup Creek	P	East Fork of Salmon River		
Sheep Creek	P	"		
Road Creek	P	"	X	X
Herd Creek	P	"	X	
McDonald Creek	P	"	X	X
Fox Creek	P	"		
Pine Creek	P	"		
Baker Creek	P	"		
Little Boulder Creek	P	"	X	
Big Boulder Creek	P	"	X	
Big Lake Creek	P	"	X	
Spar Canyon	I	"	X	X
Marco Creek	I	"		X
Jimmy Smith Lake	P	Jimmy Smith Lake		
Corral Creek	P	"		
Potamon Creek	P	Sullivan Creek		
Jeffs Creek	P	Challis Creek		X
Mill Creek	P	"	X	
Bruno Creek	P	Squaw Creek	X	
Pat Hughes	P	Thompson Creek	X	
Buckskin Creek	P	"		
Beardsley Creek	P	Bayhorse Creek		
Broken Wagon Creek	I	Warm Springs Creek		X
Lone Pine	I	"		X
Sheep Creek	I	"		X
Dry Gulch	I	"		X
Lime Creek	I	"		X
Gooseberry Creek	I	"		
Horse Basin Creek	P	Road Creek	X	X
Bear Creek	P	"		X
Chicken Creek	P	"		X
Mosquito Creek	P	"		X
Corral Basin Creek	P	Horse Basin Creek		X
Lake Creek	P	Herd Creek	X	X
Spring Creek	P	"		
Sage Creek	P	Big Lost River	X	X
Corral Creek	P	Sage Creek		X
North Fork Sage Creek	P	"		X
Bradshaw Creek	P	North Fork Sage Creek		X

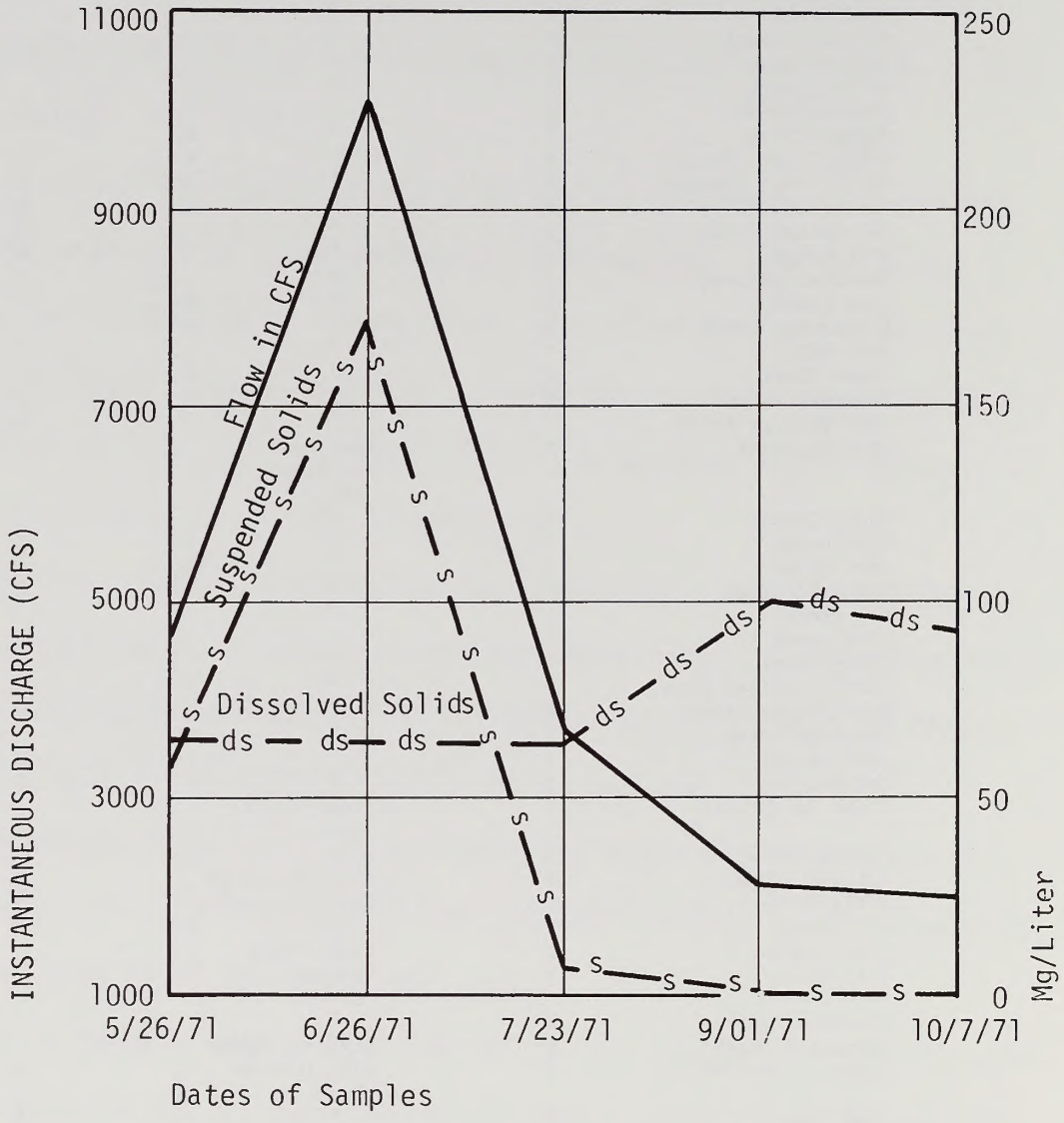
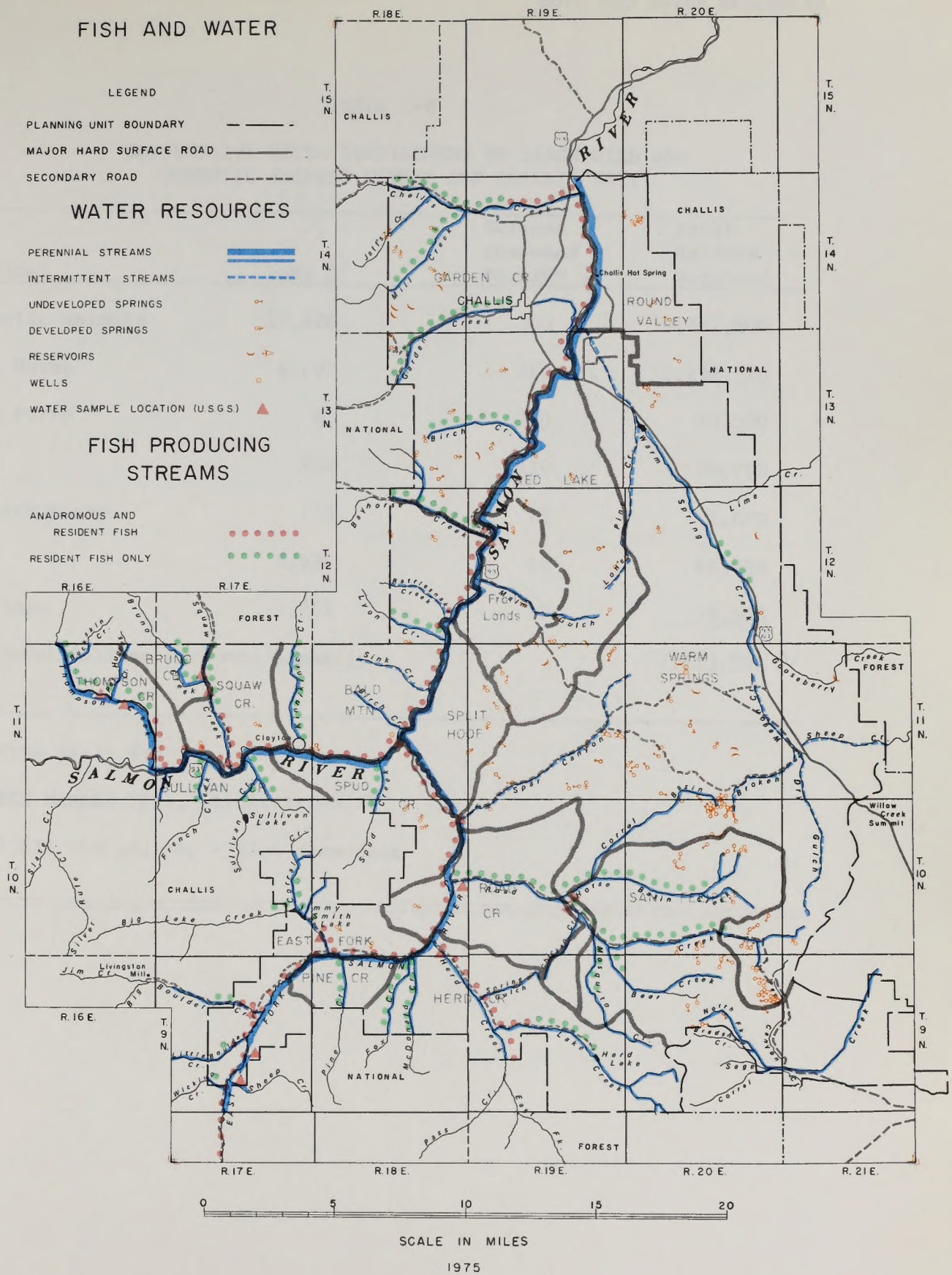


FIGURE 2-2 FLOW, SUSPENDED SEDIMENT, AND DISSOLVED SOLIDS BY MONTH FOR SALMON RIVER NEAR CHALLIS, IDAHO STATION NO. 13298500



MAP 2-5 LOCATION OF STREAMS, SPRINGS, AND LAKES WITHIN CHALLIS UNIT.

TABLE 2-6

CONSUMPTIVE WATER REQUIREMENT OF LARGE WILD AND DOMESTIC ANIMALS WITHIN THE CHALLIS UNIT

Animal	AUMs 1/	Gallons Consumed Per AUM 2/	Total Gallons Required
Domestic Animals	17,426	300	5,227,800
Wild Horse	6,107	360	2,198,520
Wild Burro	45	300	13,500
Elk	748	120	89,760
Bighorn Sheep	140	12	1,680
Deer	5,524	12	66,288
Antelope	2,959	12	35,508
Total Gallons Consumed Annually			7,633,056 3/

1/ From Table 2-4

2/ BLM Manual 1605, Illustration 12

3/ 7,633,056 gallons = 23.4 acre-feet

The City of Challis gets its water supply from Garden Creek, which flows through the northwest portion of the unit and is filtered and chlorinated before going into the system. Many Challis residents do not use the city water system and obtain water of unknown quality from wells.

The other community within the unit is Clayton (population 36). Residents obtain water from wells.

Very little is known about the underground aquifers within the unit. The Bureau of Land Management (BLM) has four wells within the unit at Bayhorse, Malm Gulch, East Fork, and Deadman Hole Campgrounds. The static water level within all the wells is 3,040 feet below the ground surface. All are probably in the Salmon River alluvium.

Specific

Soil Associations

Soil association A is largely composed of alluvial material. It encompasses approximately 49,853 acres and predominates in valleys of the unit, such as Round Valley, Antelope Flat, Bradbury Flat, and the narrow valleys of the major drainages (FIGURES 2-3 & 2-4). Soils of this material are generally six to ten inches deep over gravels and cobbles. In flood plains along major drainages, soils are usually deeper and have a high water table. Most fans and terraces have a high concentration of salts, with local areas of very high concentration.

FIGURE 2-3 BROAD ALLUVIAL VALLEY - CHARACTERISTIC LOCATION OF SOIL ASSOCIATION A. Much of the privately-owned property occurs in these areas.

FIGURE 2-4 NARROW ALLUVIAL VALLEY ALONG ROAD CREEK ILLUSTRATES ANOTHER SOIL FOUND IN ASSOCIATION A. COMMON IN CREEK BOTTOMS. These areas are important for wildlife in the unit because of abundance of vegetation.

Permeability and infiltration are good and normally there should be very little sediment loss with proper management.

The higher country is primarily sedimentary and is in two soil associations. Association B is primarily of limestone formations, while association E is primarily of quartzite and arilliceous material.

Association B (FIGURES 2-5 & 2-6) contains approximately 48,945 acres. About 40% is rock outcrop and soils less than ten inches in depth. The rest is generally 20 inches or more in depth. Textures are loams to clay loams. Waterholding capacity is low to high. Slopes are moderate (0-30%) to very steep (60+%). Soils found on the north slope in this association are usually deeper than on the south slope and may have Douglas-fir growing on them. Permeability and infiltration is good and very little sediment loss is anticipated within this association except where vegetation is removed.

Challis volcanics comprise associations C and D.

Association C (FIGURES 2-7 & 2-8) is found in most areas of the Challis Unit and encompasses approximately 127,268 acres.

Long periods of weathering have produced extensive talus rock-slides. In some areas, they have flowed down drainages like glaciers. A talus flow dammed Lake Creek to form Herd Lake. Approximately 40% of the association is rock outcroppings, talus, or soils less than ten inches deep over bedrock. There are a few basin-type areas that have deeper soils. Steep (30-60%) and very steep (60+%) slopes are common within the association and usually covered with rocks. Timber is found on some of the higher north slopes. Permeability and infiltration are

good, and normally there is not much sediment loss except when soils are saturated in the springtime and during high-intensity summer storms.

FIGURE 2-5 LIGHT-COLORED, SHALLOW SOILS OF SOIL ASSOCIATION B.

FIGURE 2-6 DARKER-COLORED, DEEPER SOILS OF SOIL ASSOCIATION B.

FIGURE 2-7 STEEPER ROCKY SOILS OF ASSOCIATION C WITH NUMEROUS OUTCROPS OF BEDROCK. The terrain is steep which can impede use by livestock. Note presence of scattered trees.

FIGURE 2-8 CLOSE-UP VIEW OF AREA WITHIN SOIL ASSOCIATION C.

Association D (FIGURES 2-9 & 2-10) is found on the lighter-colored tuffaceous material of Challis volcanics and contains approximately 93,191 acres. The major part of the association is found in Malm Gulch, Bradshaw Basin, and Spar Canyon area, with outcroppings scattered throughout the Challis Unit. The soils range from shallow to deep and loams to clays. Slopes are usually moderate to very steep. These are erodible soils, especially on the steep and very steep slopes. They have a higher potential for forage production than the steep and very steep slopes and are easily erodible when bare of vegetation. Soils in this association have a high rate of natural or geologic erosion. Permeability and infiltration varies from low to high. There is generally very little infiltration on steep slopes. High sediment loss occurs when high-intensity summer storms hit these areas.

FIGURE 2-9 TYPES OF SOILS AND EROSIVENESS OF SOIL ASSOCIATION D. The whole area depicted in this picture is representative of soils in this association. Most of these soils are sparsely vegetated and are susceptible to accelerated erosion.

FIGURE 2-10 SOILS IN SOIL ASSOCIATION D ARE FRAGILE AND EASILY ERODIBLE. Note the steep slopes and high erosion potential of this area.

Association E (FIGURES 2-11 & 2-12) contains approximately 44,362 acres. It is about 50% rockland, talus rock, and soils less than ten inches in depth. Soils are deeper on the north slopes. Permeability and infiltration is good and very little sediment loss is anticipated within the association except where vegetation is removed. Timber is usually the dominant vegetation, but sagebrush-grass vegetation may be found, especially on south slopes.

FIGURE 2-11 SOILS TYPICAL OF SOIL ASSOCIATION E. A high percentage of rock land is found in this category and is inaccessible to cattle.

FIGURE 2-12 SOILS TYPICAL OF SOIL ASSOCIATION E. North slopes have deeper soils. Note density of ground cover.

Watershed Conservation and Development Inventory

A watershed conservation and development inventory of the Challis Unit was made in 1972. This inventory uses a verbal descriptive rating to assign erosion condition classes to each area of which one, one-hundred-pace-point vegetative transect was thought to be representative. These areas, shown on MAP 2-6 vary in size. About 109 vegetative transects were taken in the area, some of which extended more than one-quarter mile in length. At each vegetative transect location the erosion condition class was rated, average depth of the majority of the plant roots was determined, and soil textures noted at the zero- to four-inch level and again between four inches and the effective root depth.

The ratings are based on the severity of seven surface parameters (if all are present):

(1) Soil movement; the amount that appears to have been lost.

(2) Surface litter; how much is displaced and how far it has moved.

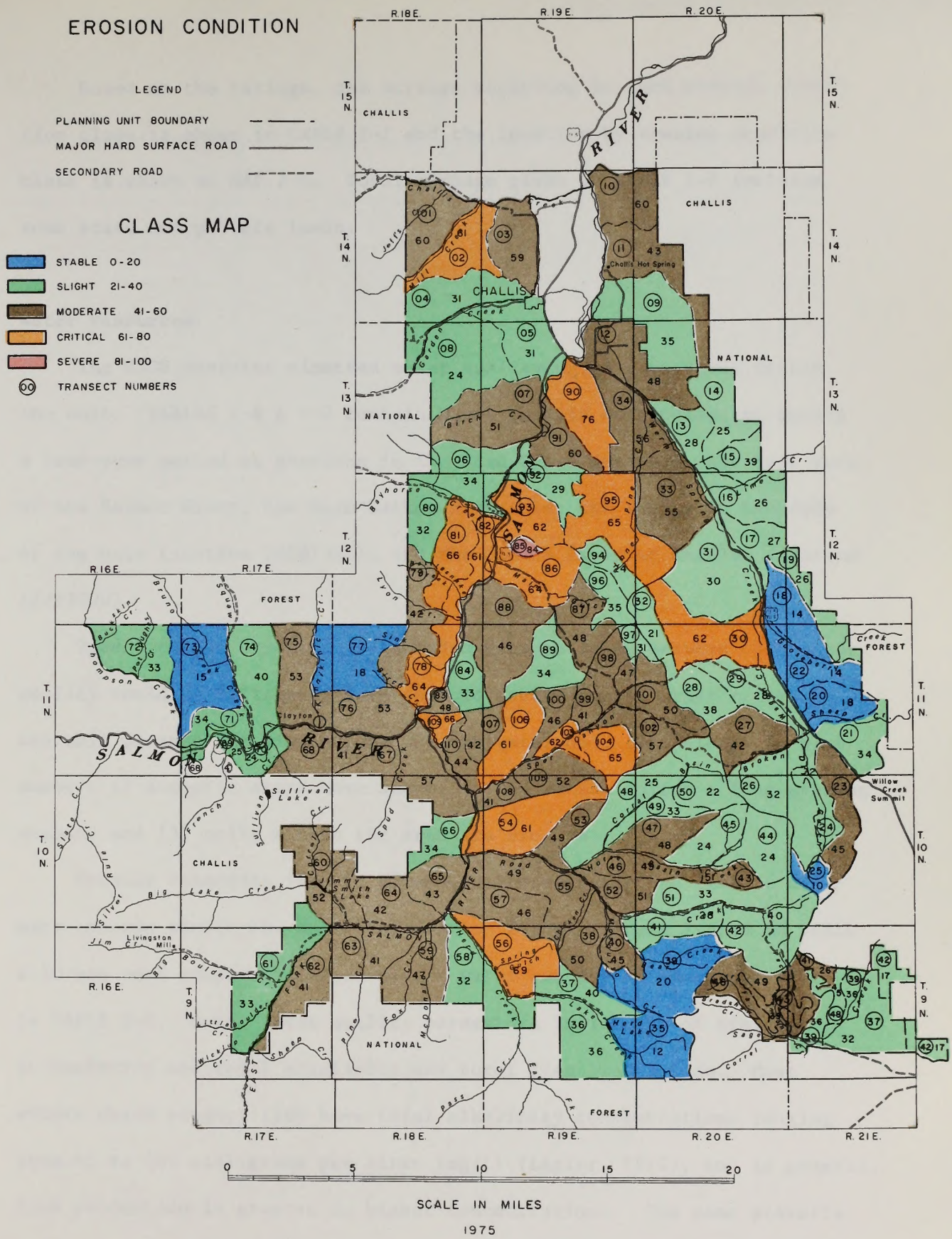
(3) Surface rock; if present, its distribution on the surface (evenly scattered or truncated and an uneven distribution).

(4) Pedestalling; whether or not plants and small rocks are pedestalled, and if plant roots are exposed, how frequently.

(5) Flow patterns; if present, are checked for evidence of moving soil, e.g., patterns containing sand or silt.

(6) Rills; if present, how large, and the frequency with which they occur.

(7) Gullies; if present, the degree of bed and bank erosion is then considered.



MAP 2-6 EROSION CONDITION OF CHALLIS UNIT.

Based on the ratings, the acreage occurring in each erosion condition class is shown in TABLE 2-7 and the location by erosion condition class is shown on MAP 2-6. Total acreage given in TABLE 2-7 includes some state and private lands.

Water Resources

The USGS operates nineteen water quality gauging stations within the unit. TABLES 2-8 & 2-9 contain water quality data collected during a four-year period at stations in the Road Creek drainage, the East Fork of the Salmon River, the main Salmon River near the southerly boundary of the unit (station 13297380), and the Salmon River at Challis (station 13293500).

Road Creek information is included because it is assumed that water quality would be influenced more in Road Creek than in other creeks in the unit because (1) wild horses use the watershed, (2) relatively high numbers of domestic stock have access to the stream during a long grazing season, and (3) soils within the area are erosive.

Because salmonids (trout, salmon, and steelhead) are fish of primary concern within the unit, information for parameters listed in TABLE 2-10 was used comparatively to assess water quality on the dates given in TABLE 2-8. Other water quality parameters indicative of biological productivity are total alkalinity and total dissolved solids. Most waters which support fish have total alkalinity concentrations ranging from 45 to 200 milligrams per liter (mg/l) (Lagler, 1970), and in general, fish production is greater in higher concentrations. The same prevails

TABLE 2-7

ACREAGE IN EACH EROSION CONDITION CLASS OF THE CHALLIS UNIT

Classes	Acres	Percent of Total
Stable - 1 - 20	33,694	9.5
Slight - 21 - 40	133,714	37.6
Moderate - 41 - 60	141,089	39.9
Critical - 61 - 80	45,753	12.9
Severe - 81 - 100	420	.1
Total	354,680	100.0

TABLE 2-8

WATER QUALITY DATA FOR THE ROAD CREEK DRAINAGE IN THE CHALLIS UNIT 1/

Date of Data	Instantaneous Discharge (CFS)	Sulfate (SO_4) (Mg/L)	Alkalinity as ($CaCO_3$) (Mg/L)	Dissolved Nitrite plus Nitrate (N) (Mg/L)	Total Phosphorus (P) (Mg/L)	Dissolved solids sum of Constituents (Mg/L)	Dissolved Solids (Tons per Ac.ft.)	Dissolved Solids (Tons per Day)	Hardness (Ca,Mg) (Mg/L)	Non-Carbonate Hardness (Mg/L)	Specific Conductance (Micromhos)	pH Units	Temperature (Deg. C)	Fecal coliform (col. per 100 ml)	Fecal Streptococci KF Agar. (Col.per 100 ml)	Carbon Dioxide (CO_2) (Mg/L)	Suspended Sediment (Mg/L)	Suspended Sediment Discharge (T/Day)	Turbidity (JTU)
STATION NAME: Road Creek Above Horse Basin Creek																			
STATION NUMBER: 13297670																			
LOCATION : SW/4 SW/4 SE/4 Sec. 22, T10N, R19E																			
6/13/71	13.0	7.8		0.03	0.12	131	0.18	4.60	69	0	167	7.7	13.5				43	1.5	
7/20/71	4.1	4.3		0.05	0.18	161	0.22	1.78	93	0	213	7.6	16.0				22	0.24	
8/11/71	3.3	4.8		0.04	0.29	176	0.24	1.57	100	0	236	7.8	16.5				26	0.23	
5/31/72	16.0	4.1		0.01	0.23	129	0.18	5.57	72	0	172	7.8	11.0				86	3.70	15
9/28/72	3.7	6.8		0.01	0.17	171	0.23	1.73	100	0	240	8.0	4.5				-	-	-
5/7/73	6.8	6.8	89	0.13	0.13	139	0.19	2.55	82	0	204	7.6	4.0						
10/7/73	-	5.2	123	.00	0.11	176	0.24	1.29	100	0	261	8.1	4.5						
8/6/74	1.9	5.7	107	.00	0.19	164	0.22	0.88	100	0	218	7.7	11.5						
9/25/74	1.9	5.9	114	0.03	0.16	169	0.23	0.87	100	0	239	8.0	11.6	81	72	2.2			
STATION NAME: Horse Basin Creek																			
STATION NUMBER: 13297680																			
LOCATION :NE/4 SE/4 SW/4, Sec. 22, T10N, R19E																			
6/13/71	3.9	14.0		0.07	0.20	293	0.40	3.09	200	0	461	8.1	16.5				82	0.86	
7/20/71	1.7	13.0		0.06	0.33	314	0.43	1.44	220	0	469	7.5	15.0				230	1.00	
8/11/71	0.86	15.0		0.02	0.19	333	0.45	0.77	220	0	486	8.2	17.0				31	0.07	
5/31/72	5.9	8.9		0.0	0.42	240	0.33	3.82	170	0	374	7.8	13.0				139	3.10	20
9/28/72	1.3	13.0		0.0	0.23	247	0.34	0.87	170	0	387	8.3	3.0						
5/7/73	4.0	15.0	174	0.05	0.37	238	0.32	2.56	170	0	379	7.9	4.0						
10/7/73	-	14.0	205	0.0	0.11	279	0.38	0.47	190	0	432	8.4	4.5	-	-	1.6			
8/6/74	0.12	18.0	245	0.0	0.05	317	0.43	0.10	230	0	438	8.6	12.5	108	250	1.2			
9/25/74	0.11	16.0	215	0.0	0.10	289	0.39	0.09	200	0	418	8.5	15.4	25	81	1.3			
STATION NAME: Road Creek Near Clayton, Idaho																			
STATION NUMBER: 13297700																			
LOCATION: NW/4 NE/4 NW/4, Sec 24, T10N, R18E																			
6/01/71	12.0	11.0		0.03	0.20	190	0.26	6.16	120	0	283	7.6	7.0				153	4.9	
6/23/71	3.8	9.8		0.16	0.40	224	0.30	2.30	140	0	340	7.7	14.0				17	0.17	
8/15/71	2.6	13.0		0.19	0.14	262	0.36	1.84	170	0	402	8.0	9.0				53	0.37	
5/31/72	5.0	-	-	-	-	-	-	-	-	-	280	-	15.5				45	0.60	9
6/21/72	11.0	12.0	-	0.02	0.15	208	0.28	6.18	130	0	320	8.1	10.5				28	0.80	4
9/28/72	4.3	7.0	-	0.00	0.14	204	0.28	2.37	130	0	313	8.1	5.5				-	-	-
5/07/73	11.0	10.0	131	0.01	0.14	187	0.25	5.65	120	0	288	8.0	6.0						
10/07/73	-	7.0	162	0.00	0.13	221	0.30	1.86	140	0	338	8.0	5.0			3.2			
8/6/74	1.6	6.0	138	0.06	0.17	194	0.26	0.85	120	0	227	8.0	14.0	128	408	2.7			
9/25/74	1.7	7.2	144	0.00	0.16	203	0.28	0.94	140	0	297	8.0	9.4	47	560	2.8			

1/ Source: U. S. Geological Survey

TABLE 2-9

WATER QUALITY DATA FOR SALMON RIVER STATIONS IN THE CHALLIS UNIT 1/

Date of Data	Instantaneous Discharge (CFS)	Sulfate (SO_4) (Mg/L)	Alkalinity as ($CaCO_3$) (Mg/L)	Dissolved Nitrite plus Nitrate (N) (Mg/L)	Total Phosphorus (P) (Mg/L)	Dissolved Solids Sum of Constituents (Mg/L)	Dissolved Solids (Tons per Ac.ft.)	Dissolved Solids (Tons per Day)	Hardness (Ca,Mg) (Mg/L)	Non-Carbonate Hardness (Mg/L)	Specific Conductance (Micromhos)	pH Units	Temperature (Deg. C)	Fecal Coliform (Col. per 100 ml)	Fecal Streptococci KF Agar (Col.per 100 ml)	Carbon Dioxide (CO_2) (Mg/L)	Suspended Sediment (Mg/L)	Suspended Sediment Discharge (T/day)	Turbidity (JTU)	Dissolved Arsenic (AS) (Ug/L)
STATION NAME :East Fork Salmon River Below Bowery Guard Station STATION NUMBER:13297400 LOCATION :NW/4 NW/4 SE/4 Sec. 20, T8N, R17E																				
5/27/71	314	9.8	-	0.04	.030	77	.10	65.3	56	0	125	8.2	5.5				18	15		
6/27/71	569	6.5	-	0.02	.020	51	.07	78.4	37	1	87	7.5	5.0				19	29		
9/2/71	60	15.0	-	0.01	.030	102	.14	16.4	73	1	173	7.8	12.0				0	.00		
5/30/72	650	-	-	-	-	-	-	-	-	-	-	-	8.5				54	95	8	
6/01/72	900	-	-	-	-	-	-	-	-	-	-	-	8.5				124	300	17	
6/03/72	760	-	-	-	-	-	-	-	-	-	-	-	6.5				123	252	22	
6/29/72	500	7.1	-	.01	.000	55	.07	74.3	43	4	92	8.0	11.5				-	-	-	
7/25/72	135	12.0	-	.00	.010	75	.10	27.3	56	7	125	7.8	8.5				<1	<.07	.3	6
10/4/72	39	22.0	78	.00	-	124	.17	13.0	87	8	208	7.8	7.0							
5/6/73	54	20.0	74	.02	.01	114	.16	16.7	81	7	196	7.9	5.0				4	.42	-	
5/23/73	348	-	-	-	-	-	-	-	-	-	-	-	-				-	-	-	
7/10/73	120	-	-	-	-	-	-	-	-	-	114	7.2	15.5				1	.94	2	
10/6/73	-	23.0	71	.01	.05	117	.16	10.3	79	8	198	8.2	9.0			0.9	-	-	-	
4/30/74	133	16.0	75	.03	-	109	.15	39.1	83	8	172	7.9	4.0			1.8				
8/5/74	157	12.0	49	.03	.00	77	.10	32.6	60	11	123	7.3	10.0	85	42	4.8				
9/24/74	43	20.0	75	.00	.02	113	.15	13.3	78	2	197	7.4	12.4	<1	<1	5.9				
STATION NAME : Salmon River Above East Fork STATION NUMBER: 13297380 LOCATION : SW/4 NE/4 SW/4 Sec. 22, T11N, R18E																				
6/01/71	7590	8.0	-	0.01	0.15	65	.09	1330	33	0	73	7.2	6.0				49	1004		
6/23/71	7600	2.5	-	0.03	0.14	51	.07	1050	26	0	68	7.1	9.0				109	2236		
7/22/71	3120	2.0	-	0.00	0.040	57	.08	480	37	0	76	8.0	12.0				3	25		
9/01/71	1180	5.3	-	0.01	0.040	85	.12	271	54	0	130	7.6	12.0				5	15		
10/8/71	1070	7.8	-	0.02	0.050	98	.13	283	74	8	140	7.6	6.5				2	0.58	-	
6/19/72	6560	5.4	-	0.13	0.050	49	.07	868	28	1	63	7.7	8.5				70	1220	6	
7/25/72	1950	5.5	-	0.00	0.010	69	.09	363	44	0	103	7.4	10.0				8	42	2	
10/4/72	983	7.0	65	0.00	-	91	.12	242	61	0	138	7.7	7.0				6	16	-	2
5/1/73	1030	5.6	53	0.01	.01	77	.10	214	50	0	119	7.8	8.5				10	28	1	1
6/7/73	2150	4.1	36	0.00	.01	56	.08	325	35	0	77	7.9	13.0				7	41	-	0

1/ Source: U. S. Geological Survey

TABLE 2-9 (cont.)

WATER QUALITY DATA FOR SALMON RIVER STATIONS IN THE CHALLIS UNIT 1/

Date of Date	Instantaneous Discharge (CFS)	Sulfate (SO_4) (Mg/L)	Alkalinity as ($CaCO_3$) (Mg/L)	Dissolved Nitrite plus Nitrate (N) (Mg/L)	Total Phosphorus (P) (Mg/L)	Dissolved Solids Sum of Constituents (Mg/L)	Dissolved Solids (Tons per Ac.ft.)	Dissolved Solids (Tons per Day)	Hardness (Ca,Mg) (Mg/L)	Noncarbonate Hardness (Mg/L)	Specific Conductance (Micromhos)	pH Units	Temperature (Deg. C)	Fecal Coliform (Col. per 100 ml)	Fecal Streptococci KF Agar (Col.per 100 ml)	Carbon Dioxide (CO_2) (Mg/L)	Suspended Sediment (Mg/L)	Suspended Sediment Discharge (T/day)	Turbidity (JTU)	Dissolved Arsenic (AS) (Ug/L)
STATION NAME : Salmon River Near Challis, Idaho																				
STATION NUMBER: 13298500																				
LOCATION : SW/4 SE/4 SE/4, Sec. 7, T12N, R19E																				
5/26/71	4680	3.5	-	0.01	.060	65	.09	821	39	0	92	7.9	8.5				56	708		
6/26/71	10100	6.8	-	0.00	.020	64	.09	1750	40	0	79	7.4	8.0				172	4690		
7/23/71	3700	3.3	-	0.00	.040	64	.09	639	44	0	94	7.6	12.5				7	69		
9/01/71	1160	5.8	-	0.03	.040	99	.13	310	66	0	157	7.7	13.0				2	6.2		
10/7/71	1100	1.3	-	0.11	.050	93	.13	276	69	0	159	7.7	11.5				2	5.9	-	
5/31/72	13000	4.4	-	0.13	.330	59	.08	2070	33	0	94	7.2	7.0				392	13800	55	
6/14/72	8760	3.9	-	0.04	.070	57	.08	1350	35	0	79	7.2	8.0				130	3070	21	
7/24/72	2020	6.1	-	0.00	.020	78	.11	425	54	0	119	7.7	14.5				9	49	1	
10/5/72	1090	8.7	75	0.00	-	104	.14	306	73	0	162	7.2	7.0				7	21	-	3
4/30/73	1100	6.8	59	0.01	.02	85	.12	251	55	0	133	7.7	9.0				10	30	1	0
6/8/73	3170	5.3	42	0.02	.03	62	.08	531	39	0	92	7.5	11.5				22	188	-	0
9/21/73	762	-	-	-	-	-	-	-	-	-	165	-	10.0				-	-	-	-
10/6/73	-	9.0	80	0.00	.01	108	.15	175	73	0	183	8.4	7.5			0.6				-
6/15/74	14400	3.9	34	0.02	.00	52	.07	2020	29	0	75	7.6	8.7			1.6				2
7/13/74	4020	-	-	-	-	-	-	-	-	-	112	7.8	13.0			0				-

1/ Source: U. S. Geological Survey

TABLE 2-10

OPTIMUM WATER QUALITY REQUIREMENTS OF SALMONIDS IN THE CHALLIS UNIT

Parameter	Phase of Life Cycle	
Parameter	Spawning and Egg Incubation	Summer Rearing and Other Periods
Dissolved Oxygen	8-10 mg/l	Not Less Than 6 mg/l
Water Temperature	42°-55°F	Not to Exceed 65°F
Turbidity (Jackson Turbidity Units)	5 or less, for Both Phases Except During Periods of High Natural Turbidity	
pH	6.7-8.6	6.7-8.6
Free Carbon Dioxide	Less Than 5 mg/l for Both Phases	

for total dissolved solids, with more productive waters having values ranging from 100 to 300 mg/1.

Temperatures in the Road Creek drainage ranged from 3.0°C to 17.0°C. Optimum water temperatures for salmonid spawning and egg incubation were exceeded in two small streams; however, the temperature was optimum for summer rearing and other periods. The water temperature on the larger streams was within the optimum range. Therefore, if it is assumed that the data are representative, it can be concluded that water quality is good for salmonids.

The optimum level of five Jackson Turbidity Units was not exceeded except during periods of high flows (TABLE 2-8), when higher turbidity occurred as a natural phenomenon. The desired pH range prevailed at the stations on all sampling dates.

Carbon dioxide concentrations did not exceed the recommended upper limit of five mg/1 except for the 9/24/74 sampling date at station 13297400 on the East Fork when the concentration was 5.9 mg/1.

To obtain current information about bacterial discharges in Road Creek, dip water samples were collected at five locations on 9/22/75 and analyzed for total and fecal coliform. Total coliform ranged from 344 to 1,092 colonies/100 milliliters (ml) compared to 104 to 190 ml for fecal coliform. Because Road Creek was at the seasonal, low-flow stage, it was assumed that the counts were higher than would prevail during higher flow periods.

As stipulated by Idaho water quality standards for Class A_2 waters (State of Idaho, 1973), not more than 20% of total samples during any

30-day period can exceed 1000/100 ml coliform. Sampling was not conducted for an adequate time period to ascertain if the standard is being achieved.

Using fecal strep data in TABLE 2-8, fecal coliform to fecal strep ratios were calculated. On 8/6/74 and 9/25/74, ratios were .43 and .31 respectively at station 13297680. This is evidence that the influx is predominately or entirely from livestock or poultry wastes (Millipore, 1972). Because poultry are not reared in Horse Basin Creek, it is assumed that livestock are the source. For station 13297700 on 8/6/74 and 9/25/74, fecal coliform to fecal strep ratios were .31 and .08 respectively. These values substantiate that bacteria entry is attributable to livestock.

Based on analysis of measured parameters (temperature, pH, total alkalinity, conductivity, turbidity, hardness, Ca, Mg, Zn, Cu, Pb, Ag), it was concluded that high water quality per se predominated in the unit (Rabe, et.al., 1975) for the sampling period.

Because erroneous assumptions about the overall status of an aquatic environment can result when water is sampled for a limited time span such as an instant during one day, invertebrate communities were also evaluated. Rabe collected benthos (bottom dwelling invertebrates), and after analyzing samples he computed Shannon-Weiner diversity indices ($\bar{d}$). An index is reflective of overall quality of a stream. A ($\bar{d}$) value in excess of three indicates a clean environment, between one and three indicates an altered environment, and a value below one is reflective of a heavily altered or polluted environment.

TABLE 2-11 lists the ($\overline{d}$) value for sites sampled in the unit. Based on these criteria, an unaltered environment exists in Big and Little Boulder Creeks, station 2 in Garden Creek, station 3 in Herd Creek, station 1 in Kinnikinic Creek, Lyon Creek, and stations in Squaw Creek. The remaining sixteen stations had values associated with altered environments; two stations (Road Creek #3 and Sage Creek) had values less than one.

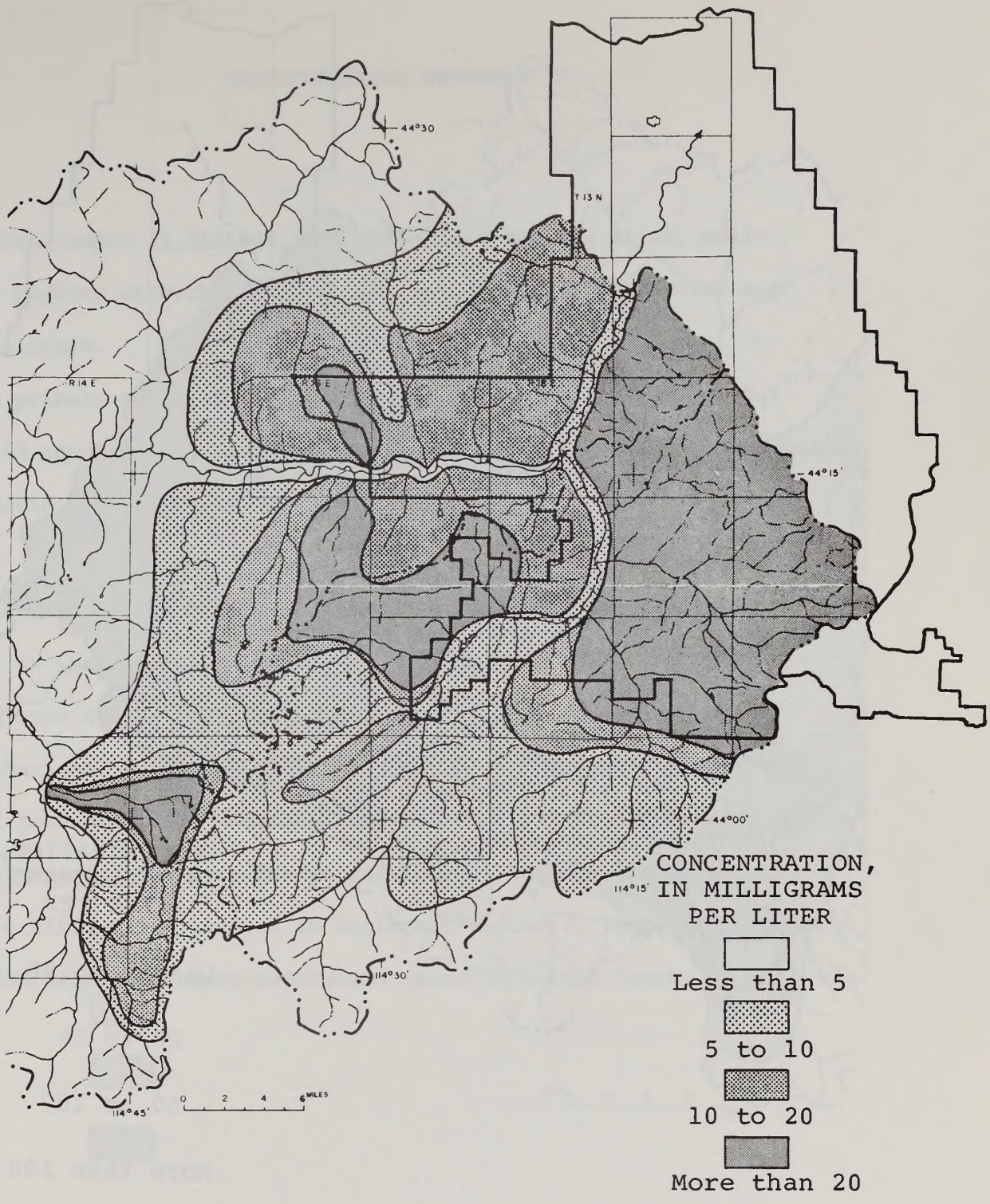
Assuming Rabe's results are representative, aquatic habitat for the unit as a composite is in an altered category. Based on field observations of streambeds, the major factor contributing to altered conditions is the influx and deposition of silt. MAPS 2-7 and 2-8 depict sediment loads for low and high flows in the Challis area.

TABLE 2-11

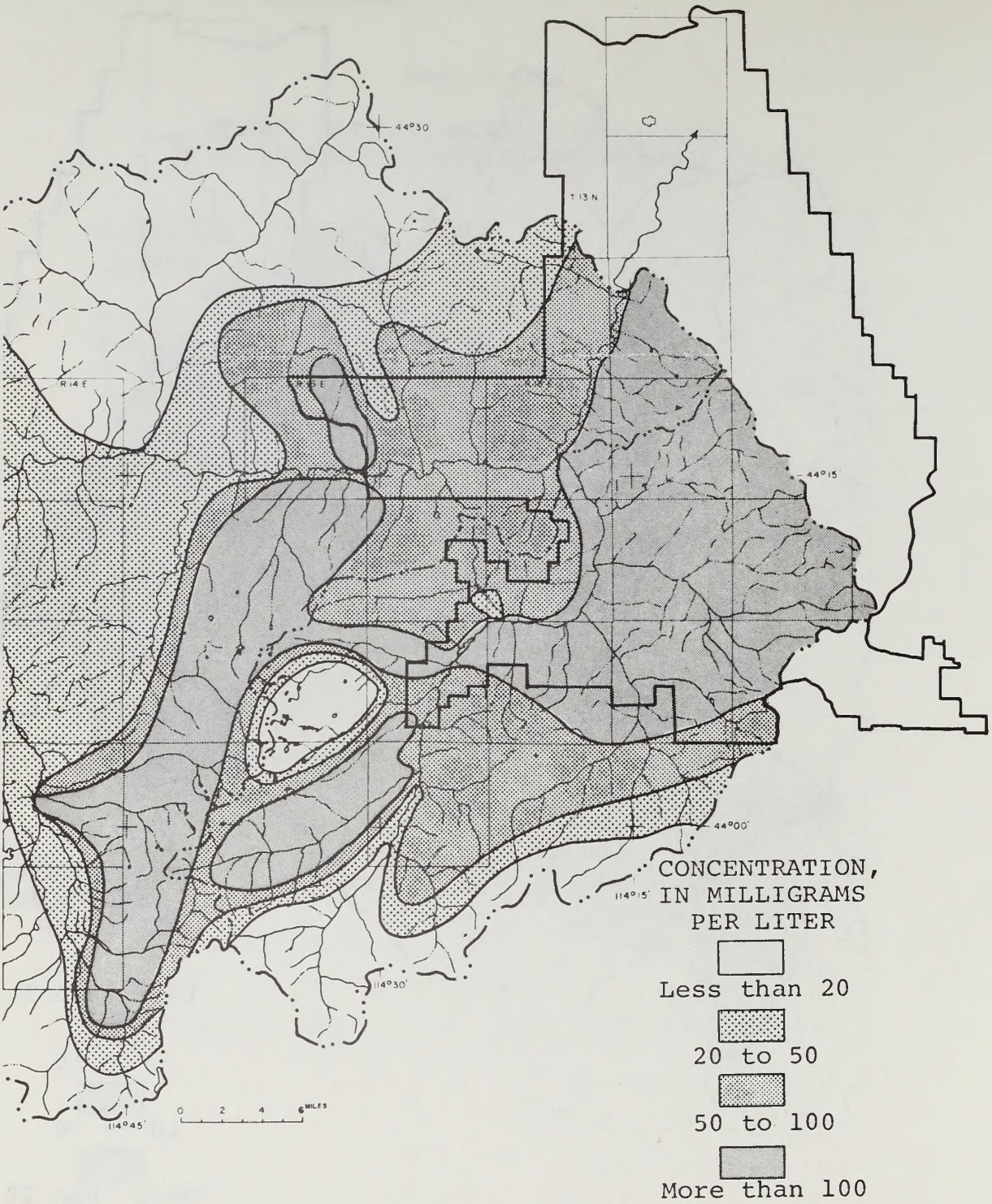
BENTHOS DIVERSITY INDEX (d) FOR STATIONS IN THE CHALLIS UNIT SAMPLED DURING AUGUST 1975 1/

Stream and Station	Diversity Index (d)
Big Lake	2.53
Boulder, Big	3.01
Boulder, Little	3.06
Bruno	2.91
Challis, #1	2.91
Corral Basin	1.56
Garden, #1	2.43
Garden, #2	3.03
Herd, #2	2.98
Herd, #3	3.35
Kinnikinic, #1	3.21
Kinnikinic, #2	2.00
Lake, #1	2.79
Lake, #2	2.82
Lyon	3.86
Road, #1	2.78
Road, #2	2.72
Road, #3	0.33
Sage	0.92
Squaw, #1	3.36
Squaw, #3	3.30
Thompson, #1	2.76
Thompson, #2	2.71
Thompson, #3	2.75

1/ Source: Rabe, et.al., 1975



MAP 2-7 SEDIMENT LOADS DURING LOW FLOWS IN THE CHALLIS UNIT AND SURROUNDING AREA.



MAP 2-8 SEDIMENT LOADS DURING BANKFULL DISCHARGES IN THE CHALLIS UNIT.

TRANSPORTATION NETWORKS

Highways

Custer County is distant from rail lines and the major, well-traveled highway network. All freight in or out of the country must travel by truck.

Two primary surfaced highways service the area (MAP 2-9). U.S. Highway 93 connects the Stanley Basin and Challis with Salmon and Montana to the north. U.S. Highway 93 Alternate connects Challis with Mackay and Arco.

There are approximately 200 miles of surfaced, state-maintained highways in Custer County. Improved county roads service the main ranching area around Challis. The Bureau of Land Management and the Challis National Forest maintain several roads from the highways to national resource lands and the National Forests. Range roads or trails generally service the more remote portions of the Challis Unit. These roads are difficult to travel in inclement weather. There are approximately 503 miles of county-maintained roads in Custer County.

LAND USE CONTROLS AND CONSTRAINTS

Federal

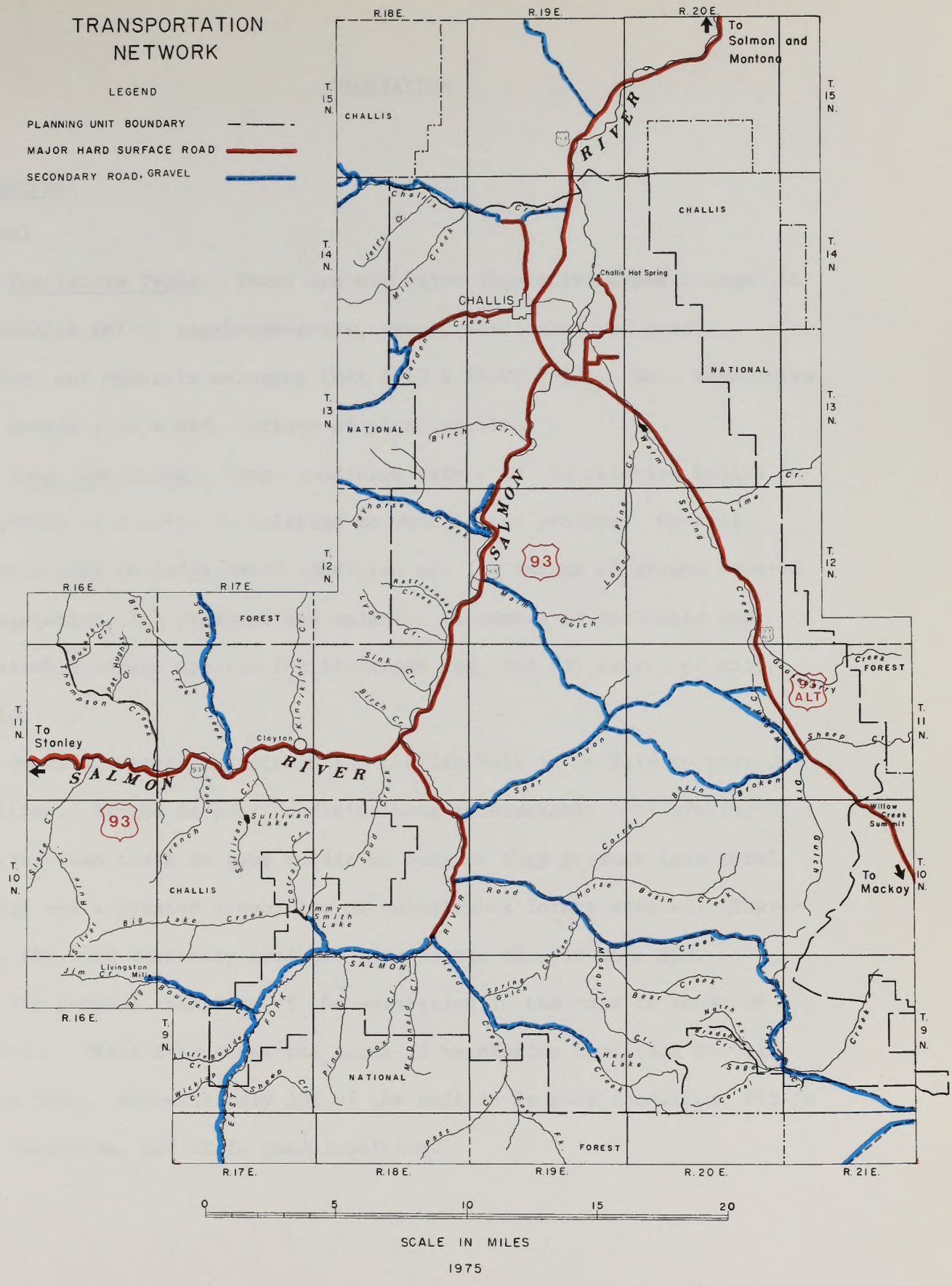
Federal lands comprise approximately 95% of Custer County. Twenty-seven percent is national resource lands (NRL) managed by the Bureau of Land Management and the balance is managed by the Forest Service. Both agencies have monitoring, compliance, and enforcement authority to control land use. There is a cooperative sharing of management and control functions of certain activities, such as fire control and grazing on some allotments.

State of Idaho

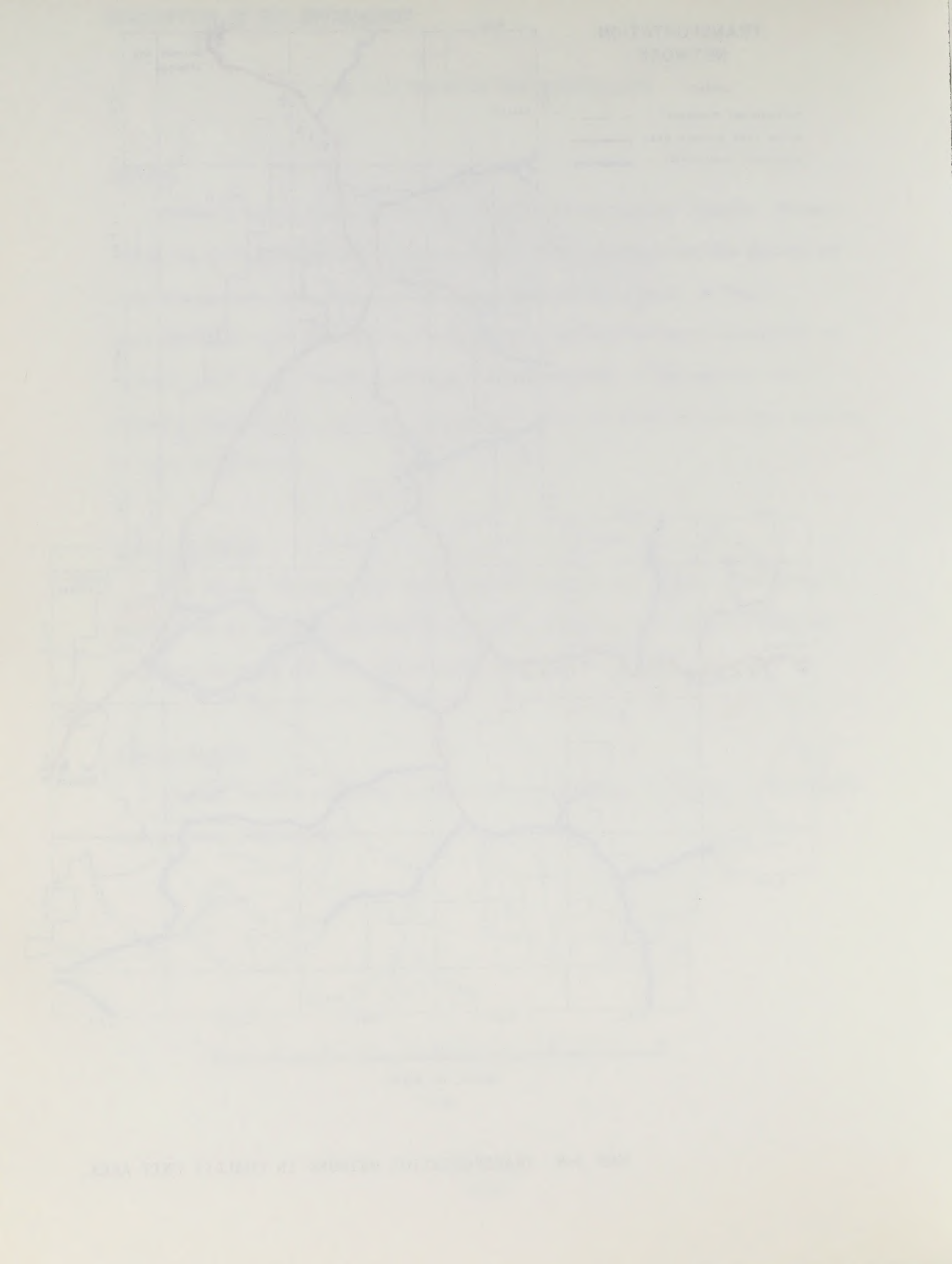
The State of Idaho has jurisdiction over state lands. The state's grazing lands located within the Challis Planning Unit are utilized in conjunction with the NRL grazing permits.

Custer County

Custer County planning activities are limited to county, municipal, and private properties.



MAP 2-9 TRANSPORTATION NETWORK IN CHALLIS UNIT AREA.



Terrestrial

General

Vegetative Types. There are six major vegetative types present in the Challis Unit: sagebrush-grass, grass, shadscale, wet meadow, conifer, and mountain mahogany (MAP 2-10 & TABLE 2-12). Each vegetative type consists of a wide variety of plant species.

Range Condition. Range condition refers to the relative health or production of a range in relation to what it can produce. General criteria used to judge range condition are (1) amount of ground covered by vegetation, (2) presence and relative abundance of desirable and undesirable forage species for livestock use, and (3) extent of soil erosion.

Overall, vegetation within the Challis Unit is in fair to poor condition. Ranges in poor condition have considerably less grazing capacity than those in good condition because they produce less total herbage and a greater proportion of undesirable forage species. Therefore, the unit currently produces less forage than it once did.

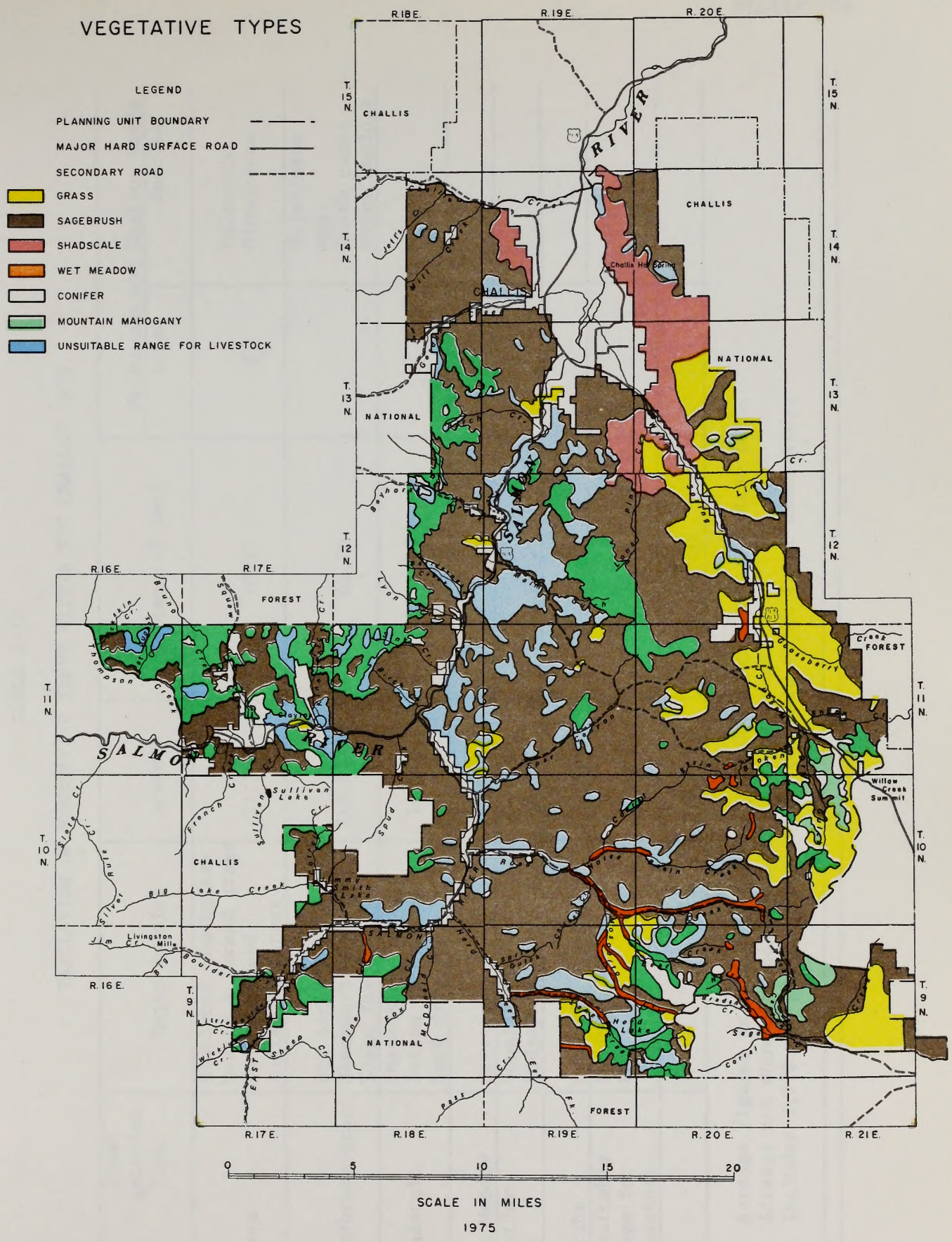
The general condition of the vegetation in the unit is shown on MAP 2-11. TABLE 2-13 shows the acres of vegetation condition by vegetative type. Approximately 30% of the unit is in poor condition, 64% in fair condition, and 6% in good condition.

TABLE 2-14 shows the present acreage by vegetative type and present condition class by proposed allotment.

TABLE 2-15 shows present acreage and AUMs production by vegetative type, condition class, and proposed allotment.

Trend. Domestic livestock currently graze the Challis Unit primarily in the spring and early summer with some later summer and fall use (see livestock grazing discussion in the Agriculture Section). Ranges are grazed more or less continuously in the same manner year after year.

Trend of range condition is a determination of whether the range is improving, remaining stable, or deteriorating. It is based upon characteristics of both vegetation and soil. The present trend of range condition for the Challis Unit is shown on MAP 2-12. Present acreage of trend by vegetative type, condition class, and allotment is shown in TABLE 2-16.



MAP 2-10 MAJOR VEGETATIVE TYPES WITHIN THE CHALLIS PLANNING UNIT.

TABLE 2-12

TABULATION OF VEGETATIVE TYPES WITHIN THE CHALLIS UNIT

Broad Vegetative Type	Major Species	Acres 1/	Percent of Land	Poisonous and Noxious Weeds	
				Acres	Species
Grass	Bluebunch wheatgrass Needle & Thread grass Sand dropseed Indian ricegrass	37,392	10.45	2/	Halogeton Glomeratus
Sagebrush-grass	Big sagebrush Bluebunch wheatgrass Idaho fescue	218,945 3/	61.20		Delphinium spp. Death camas Water hemlock
Shadscale	Shadscale Indian ricegrass Sand dropseed	14,261	3.99		
Wet Meadow	Carex spp.	2,994	.84		
Conifer	Douglas-fir Lodgepole pine	36,351	10.16		
Shrubs	Mountain mahogany	3,488	.97		
Unsuitable range for livestock	Sandberg bluegrass Phlox	44,333	12.39		
		357,764	100.00		

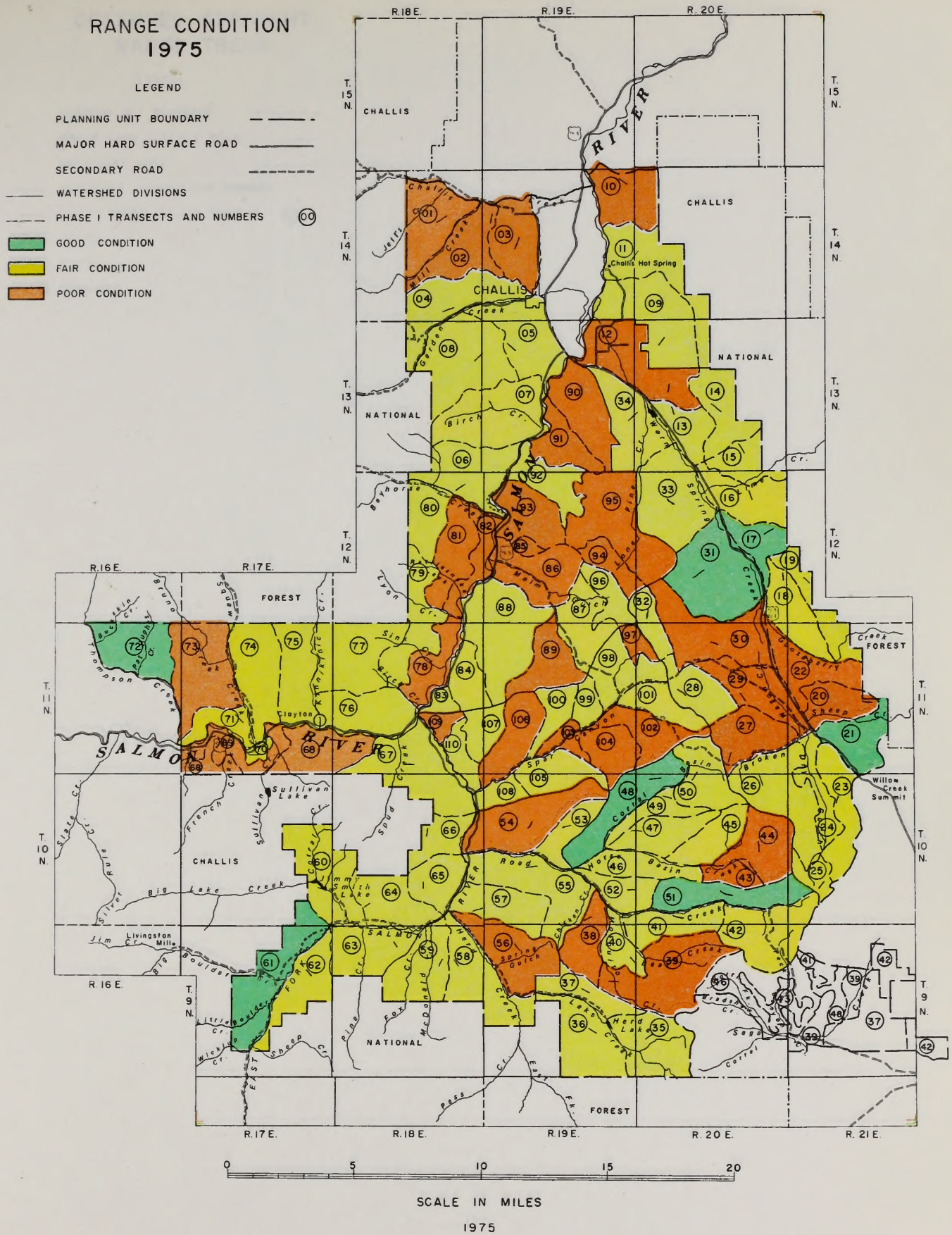
1/ Acreage figures include approximately 19,000 acres State of Idaho lands.
2/ Acreage not shown for poisonous and noxious weeds.
3/ Includes 3,776 non-productive acres in the Malm Gulch Frail Lands area.

TABLE 2-13

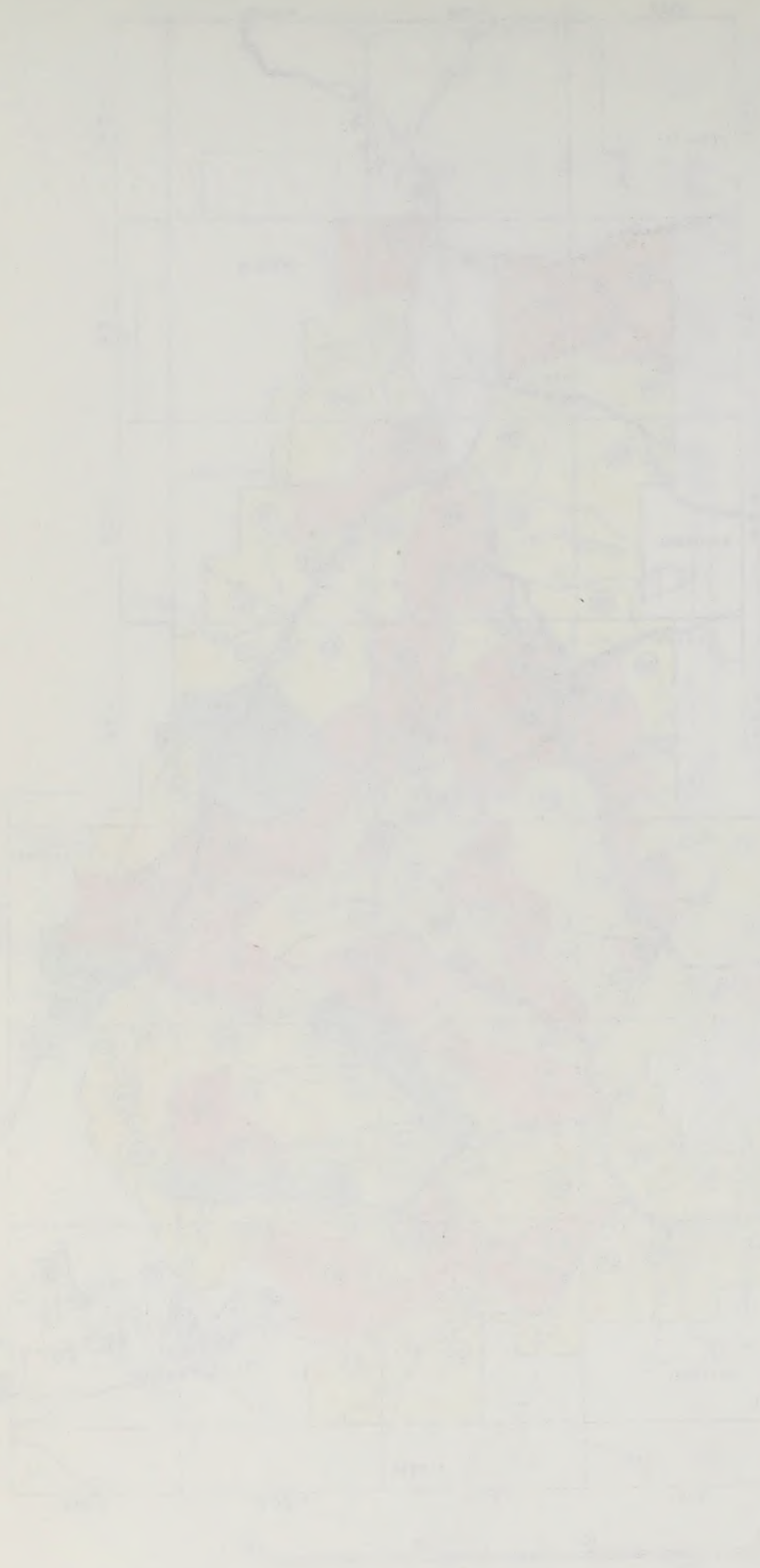
PRESENT VEGETATIVE STATUS OF CHALLIS UNIT

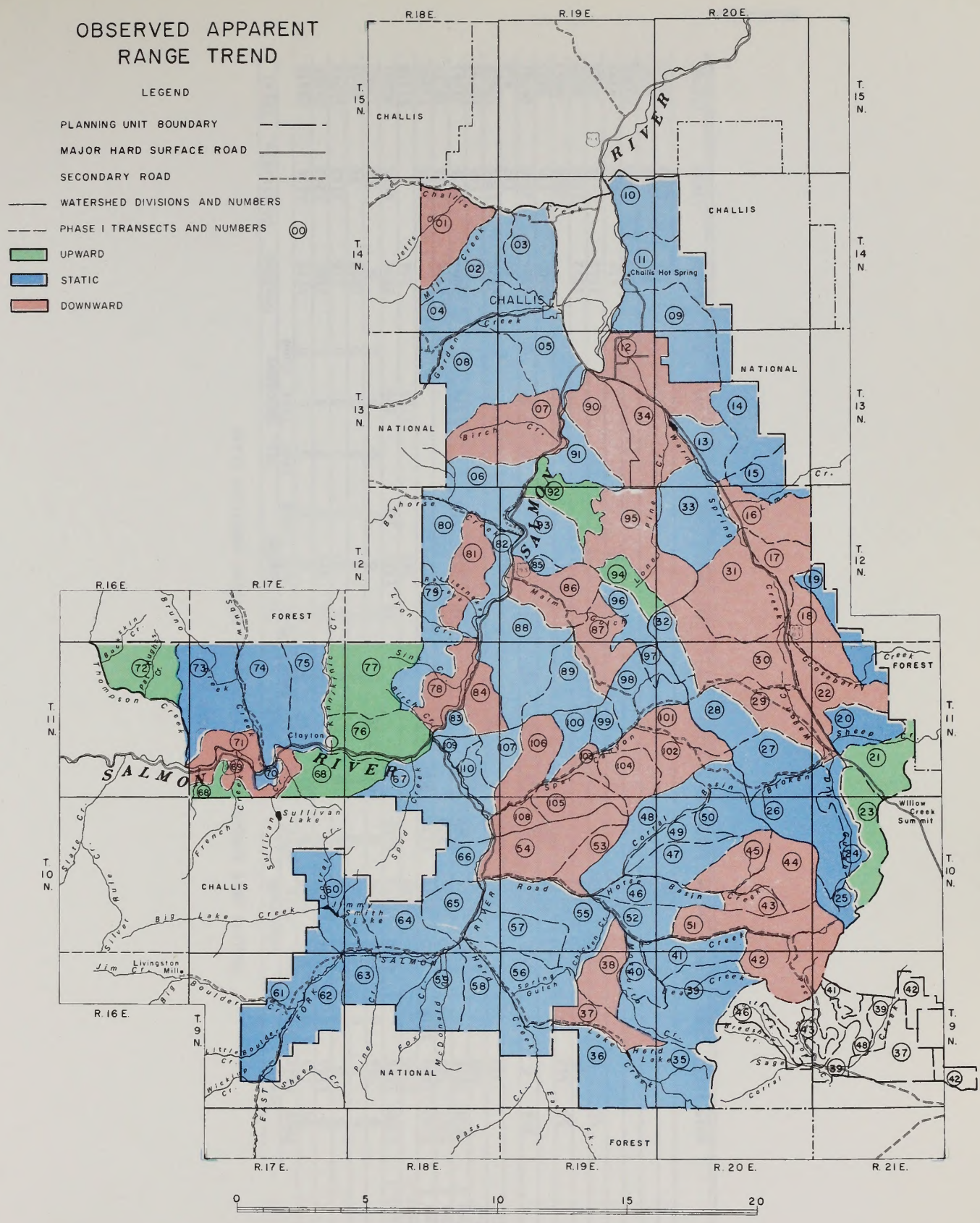
VEGETATIVE TYPE	Condition Class (Acres)			TREND BY CONDITION CLASS (ACRES)									Production (AUMs)		
				Poor			Fair			Good					
	Poor	Fair	Good	Downward	Static	Upward	Downward	Static	Upward	Downward	Static	Upward	Poor	Fair	Good
Grass	9,035	25,672	2,685	6,931	2,054	50	7,446	18,226	--	2,465	--	220	462	4,498	598
Sagebrush	69,873	134,396	14,676	47,568	21,885	420	22,442	104,680	7,274	3,601	9,105	1,970	2,088	14,420	3,889
Shadscale	2,706	11,555	--	1,050	1,656	--	2,375	9,180	--	--	--	--	89	1,526	--
Wet Meadow	310	2,424	260	240	70	--	673	1,751	--	260	--	--	60	1,221	325
Mtn. Mahogany	--	3,408	80	--	--	--	--	2,553	855	--	--	80	--	655	11
Conifer 1/	--	7,000 1/	--	--	--	--	--	--	--	--	--	--	--	400 1/	--
Unsuitable	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Subtotal	81,924	177,455	17,701	55,789	25,665	470	32,936	136,390	8,129	6,326	9,105	2,270	2,699	22,230	4,823
Total		277,080			81,924			177,455			17,701			29,842	

1/ Acres and AUMs production estimated for the conifer type. This is a non-add item not included in totals.



MAP 2-11 GENERAL VEGETATIVE CONDITION IN CHALLIS UNIT.





MAP 2-12 CURRENT TREND OF VEGETATIVE CONDITION.

TABLE 2-14

CHALLIS UNIT ACREAGE BY VEGETATIVE TYPE, PRESENT CONDITION CLASS

	Grass			Sagebrush			Shad Scale			Wet Meadow			Mtn. Mahogany			Conifer	Unsuitable	Total
	Poor	Fair	Good	Poor	Fair	Good	Poor	Fair	Good	Poor	Fair	Good	Poor	Fair	Good			
Red Lake	94	144	0	10402	5348	0	150	250	0	0	0	0	0	0	0	4270	4674	25332
Herd Cr.	0	1184	0	3536	12544	0	0	0	0	50	494	0	0	0	0	2640	4240	24688
Road Cr.	0	0	0	6954	6818	0	0	0	0	0	32	0	0	0	0	128	2142	16074
Bruno Cr.	0	0	0	274	0	0	0	0	0	0	0	0	0	0	0	2083	96	2453
Round Valley	0	528	0	2502	1594	0	1056	7199	0	0	0	0	0	0	0	0	704	13583
San Felipe (3 past.)	1320	1816		4890	11273	1140				94	1374	100		288		2096	5616	30007
" " (4 past.)		2720			6448						160			1792		208		11328
Warm Springs Area 1	1140	12204	2010	110	8628	1230	900	4076									1398	31696
" " Area 2	5217	340	675	15600	11124	1820				146					80	2956	1826	39784
" " Area 3	910	5118		5320	13924	5800				20	236	160		1328		1909	2936	37661
North Garden Cr.		698		8192	2660		600										644	12794
South Garden Cr.		330			13500	60		30								2928	1580	18428
Hillside					224											80	112	416
Bald Mtn.	208	0	0	5520	9689	0	0	0	0	0	0	0	0	0	0	6384	2960	24761
Thompson Cr.				110	1239	150										3600	736	5835
Split Hoof	50	542		330	5133												3600	9655
Squaw Cr.		48		220	5624											1872	1056	8820
Spud Cr.	96			420	6638											1648	624	9426
Pine Cr.					3590						128					416	160	4294
East Fork					6540	4476										2544	1440	15000
Sullivan				2817	758											880	490	4945
Frail Lands				2676	1100											220	6788	10784
	9035	25672	2685	69873	134396	14676	2706	11555	0	310	2424	260	0	3408	80	36862	43822	357764

TABLE 2-15

PRESENT AUMs PRODUCTION BY VEGETATIVE TYPE AND CONDITION CLASS

Allotment	Grass Vegetative Type						Sagebrush-grass Vegetative Type						Shadscale Vegetative Type					
	Poor		Fair		Good		Poor		Fair		Good		Poor		Fair		Good	
	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs
Red Lake	94	10	144	18			10,402	308	5,348	619			150	6	250	25		
Herd Creek			1,184	192			3,536	116	12,544	1,520								
Road Creek							6,954	177	6,818	807								
Bruno Creek							274	8										
Round Valley			528	79			2,502	52	1,594	184			1,056	28	7,199	1,060		
San Felipe (3 past.)	1,320	67	1,816	294			4,890	158	11,273	1,358	1,140	312						
San Felipe (4 past.)			2,720	680					6,448	1,021								
Warm Springs Area 1	1,140	58	12,204	1,889	2,010	423	110	-	8,628	913	1,230	101	900	35	4,076	439		
Warm Springs Area 2	5,217	266	340	51	675	175	15,600	600	11,124	822	1,820	848						
Warm Springs Area 3	910	48	5,118	1,081			5,320	144	13,924	1,404	5,800	1,344						
North Garden Creek			698	105			8,192	283	2,660	300			600	20				
South Garden Creek			330	40					13,500	1,495	60	14			30	2		
Hillside									224	28								
Bald Mountain	208	7					5,520	130	9,689	947								
Thompson Creek							110	4	1,239	152	150	40						
Split Hoof	50	2	542	63			330	7	5,133	661								
Squaw Creek			48	6			220	7	5,624	560								
Spud Creek	96	4					420	12	6,638	507								
Pine Creek									3,590	367								
East Fork									6,540	695	4,476	1,230						
Sullivan							2,817	62	758	60								
Frail Lands							2,676	-	1,100									
Totals	9,035	462	25,672	4,498	2,685	598	69,873	2,088	134,396	14,420	14,676	3,889	2,706	89	11,555	1,526		

TABLE 2-15 (cont.)

PRESENT AUMs PRODUCTION BY VEGETATIVE TYPE AND CONDITION CLASS

Allotment	Wet Meadow Vegetative Type						Mtn. Mahogany Vegetative Type					
	Poor		Fair		Good		Poor		Fair		Good	
	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs	Acres	AUMs
Red Lake												
Herd Creek	50	5	494	15								
Road Creek			32	20								
Bruno Creek												
Round Valley												
San Felipe (3 past.)	94	20	1,374	858	100	125			288	47		
San Felipe (4 past.)			160	100					1,792	276		
Warm Springs Area 1												
Warm Springs Area 2	146	31									80	11
Warm Springs Area 3	20	4	236	148	160	200			1,328	332		
North Garden Creek												
South Garden Creek												
Hillside												
Bald Mountain												
Thompson Creek												
Split Hoof												
Squaw Creek												
Spud Creek												
Pine Creek			128	80								
East Fork												
Sullivan												
Frail Lands												
Totals	310	60	2,424	1,221	260	325			3,408	655	80	11

TABLE 2-16

PRESENT TREND BY VEGETATIVE TYPE AND CONDITION CLASS

	Grass Vegetation Type									Sagebrush Vegetation Type								
	Poor			Fair			Good			Poor			Fair			Good		
	Down	Static	Up	Down	Static	Up	Down	Static	Up	Down	Static	Up	Down	Static	Up	Down	Static	Up
Red Lake	94			144						7,016	3,386		3,226	1,422	700			
Herd Creek				50	1,134						3,536		604	11,940				
Road Creek										6,954			1,096	5,722				
Bruno Creek										274								
Round Valley					528						2,502			1,594				
San Felipe (3 past.)	910	410			1,816					3,069	1,821		1,521	9,752		1,140		
San Felipe (4 past.)					2,720									6,448				
Warm Springs Area 1	1,140			6,312	5,892		1,930		80	110			645	7,983		1,230		
Warm Springs Area 2	4,617	570	30	220	120		535		140	14,290	1,310		2,598	8,526				1,820
Warm Springs Area 3		910		390	4,728					4,164	1,156		5,560	8,364		1,231	4,569	
North Garden Creek					698					3,840	4,352			2,660				
South Garden Creek				330									4,580	8,920			60	
Hillside														224				
Bald Mountain	120	88								4,820	700			3,240	6,449			
Thompson Creek											110		1,239					150
Split Hoof	50				542					120	210		640	4,493				
Squaw Creek					48					220			385	5,239				
Spud Creek		76	20									420		6,513	125			
Pine Creek														3,590				
East Fork														6,540			4,476	
Sullivan										1,365	1,452		348	410				
Frail Lands										1,326	1,350			1,100				
Totals	6,931	2,054	50	7,446	18,226	-	2,465	-	220	47,568	21,885	420	22,442	104,680	7,274	3,601	9,105	1,970
		9,035			25,672			2,685			69,873			134,396			14,676	

TABLE 2-16 (cont.)

PRESENT TREND BY VEGETATIVE TYPE AND CONDITION CLASS

	Shadscale Vegetation Type									Wet Meadow Vegetation Type								
	Poor			Fair			Good			Poor			Fair			Good		
	Down	Static	Up	Down	Static	Up	Down	Static	Up	Down	Static	Up	Down	Static	Up	Down	Static	Up
Red Lake	150			250														
Herd Creek											50		394	100				
Road Creek														32				
Bruno Creek																		
Round Valley		1,056			7,199													
San Felipe (3 past.)										94			243	1,131		100		
San Felipe (4 past.)														160				
Warm Springs Area 1	900			2,125	1,951													
Warm Springs Area 2										146								
Warm Springs Area 3											20		36	200		160		
North Garden Creek		600																
South Garden Creek					30													
Hillside																		
Bald Mountain																		
Thompson Creek																		
Split Hoof																		
Squaw Creek																		
Spud Creek																		
Pine Creek														128				
East Fork																		
Sullivan																		
Frail Lands																		
Totals	1,050	1,656		2,375	9,180					240	70		673	1,751		260		
		2,706			11,555						310			2,424			260	

TABLE 2-16 (cont.)

PRESENT TREND BY VEGETATIVE TYPE AND CONDITION CLASS

	Mountain Mahogany Vegetation Type								
	Poor			Fair			Good		
	Down	Static	Up	Down	Static	Up	Down	Static	Up
Red Lake									
Herd Creek									
Road Creek									
Bruno Creek									
Round Valley									
San Felipe (3 past.)					288				
San Felipe (4 past.)					1,792				
Warm Springs Area 1									
Warm Springs Area 2									80
Warm Springs Area 3					473	855			
North Garden Creek									
South Garden Creek									
Hillside									
Bald Mountain									
Thompson Creek									
Split Hoof									
Squaw Creek									
Spud Creek									
Pine Creek									
East Fork									
Sullivan									
Frail Lands									
Totals					2,553	855			80
					3,408			80	

Specific

Sagebrush-grass Type. The Challis Unit is dominated by the sagebrush-grass type (FIGURE 2-13), which covers 218,945 acres or approximately 61% of the area. This type has the appearance of being uniform throughout, but actually contains a large number of subdivisions or associations. These associations occur from the lowest elevations to well over 9,000 feet.

FIGURE 2-13 SAGEBRUSH-GRASS VEGETATIVE TYPE. Approximately 61% of the Challis Unit is covered by this vegetative type. Grass plants can be observed among the low sagebrush plants.

Vegetative Species. On south slopes up to 7,500 feet, the big sage-bluebunch wheatgrass association or community is most common. On north slopes up to 7,500 feet elevation, sagebrush-Idaho fescue may dominate. Many associations are characterized by the dominance of a single sagebrush species or subspecies along with associated grasses and forbs. Others have an understory of various grass and forb species in a mixture with other shrubs.

Other sagebrush species present throughout the unit in various locations and amounts are low sagebrush (Artemisia arbuscula), three-tip sagebrush (Artemisia tripartita), black sagebrush (Artemisia nova), silver sagebrush (Artemisia cana subsp. viscidula), fringed sagebrush (Artemisia fridiga), and bud sagebrush (Artemisia spinescens). Winterfat, commonly called whitesage (Cenatodes lanata), is also present.

Major shrubs found with sagebrush are various rabbitbrush species including rubber rabbitbrush (Chrysothamnus nauseosus) and Douglas rabbitbrush (Chrysothamnus viscidiflorus), shadscale (Artriplex confertifolia), broom snakeweed (Gutiarrezie sarothrae), and blackgreasewood (Sarcobatus vermiculatus).

Minor amounts of spiny hopsage (Atriplex spinosa) and horsebrush (Tetradymia spp) are present, generally in the lower elevations. Snowberry (Symphoricarpos spp), mountain mahogany (Cercocarpus ledifolius), prickly phlox (Leptodactylon pungens), antelope bitterbrush (Puishia tridentata), buckbrush (Ceanothus velutinus), and chokecherry (Prunus virginiana) are some of the other shrubs intermixed with sagebrush in varying amounts in the higher elevations.

The more important grasses making up the understory of the sagebrush-grass type are bluebunch wheatgrass (Agropyron spicatum), Idaho fescue (Festuca idahoensis), sandberg bluegrass (Poa secunda), needle and thread grass (Stipa comata), letterman needlegrass (Stipa lettermani), and squirreltail (Sitanion hystrix). Other grasses present are Indian ricegrass (Oryzopsis hymenoides), desert ricegrass (Oryzopsis swallenii), sand dropseed (Sporobolus cryptandrus), western wheatgrass (Agropyron Smithii), oniongrass (Melica bulbosa), Junegrass (Koeleria cristata),

wildrye (Elymus ambiguus and Elymus cineres), and cheatgrass (Bromus tectorum). Carex (Carex spp), a grass-like plant, is also present in many areas.

There are various forbs present throughout the sagebrush-grass type. The quantity and distribution of these plants is highly influenced by amount and timing of precipitation. Some of the more common forbs are the various species of phlox (Phlox spp), lupine (Lupine spp), loco weed (Astragalus spp), hawksbeard (Crepis acuminata), fleabane (Erigeron spp), lomatium (Lomatium spp), bitterroot (Lewisia rediviva), gilia (Gilia aggregata), stone seed (Lithespermum spp), oyster salsify (Tragopogon porrifolius), groundsel (Senecio spp), halogeton (Halogeton glomeratus), Russian thistle (Salsola pestifier), tumble mustard (Sisymbrium altissimum), globemallow (Sphaeralcea spp), eriogonum (Eriogonum spp, and aster (Aster spp).

Range Condition. The sagebrush-grass type is primarily in poor (FIGURE 2-14) to fair condition (FIGURE 2-15) with some areas in good condition (FIGURE 2-16).

In general, the lower areas adjacent to water are in the poorest condition, while areas of higher elevation away from water are in fair to good condition.

In the early spring and fall, green-up of grasses in the lower areas provide protein which the animals readily seek out and utilize.

In some areas, unauthorized use by domestic livestock is apparent. This results in additional utilization of the forage species and has contributed to the deteriorated condition.

FIGURE 2-14 SAGEBRUSH-GRASS TYPE RANGE IN POOR CONDITION. Note sparsity of grass between sagebrush plants. Livestock utilize grass more intensely than sagebrush giving grass a competitive disadvantage.

FIGURE 2-15 SAGEBRUSH-GRASS TYPE RANGE IN FAIR CONDITION. More grass occurs in these areas than on range in poor condition. Grass hummocks due to erosion may be observed.

FIGURE 2-16 SAGEBRUSH-GRASS TYPE RANGE IN GOOD CONDITION. Note greater ground cover and species diversity than in Figures 2-14 and 15.

Concentrated, heavy use by livestock in the lower areas, especially near available water sources, therefore, has resulted in more or less continuous use of the desirable forage species during the spring growing period. Consequently, many desirable plants have been killed and replaced with less desirable or undesirable plants for livestock use.

In the higher elevations, grazing use is generally not as continuous or concentrated. Areas away from water with moderate to steep slopes, and some ridgetops, receive little use by domestic livestock. Grazing use in these areas is primarily by wild horses and game animals.

Trend. Approximately 34% or 73,611 acres of the sagebrush-grass type are in a declining trend, with 62% or 135,670 acres stable, and 4% or 9,664 acres upward.

Areas in poor condition with a downward trend (FIGURE 2-17) generally show strong signs of invasion by undesirable plants for livestock use. This is evidenced by the amount of sagebrush, rabbitbrush, and snakeweed seedlings and young plants present in the interspaces. Areas in a downward trend are generally near the bottoms and other areas where water is available, and topography is not limiting grazing use.

FIGURE 2-17 SAGEBRUSH-GRASS TYPE IN POOR CONDITION WITH DOWNWARD TREND. These areas are dominated by vegetation unpalatable to livestock. Note lack of species diversity and young sagebrush plants becoming established.

In these areas there are very few, if any, seedlings of bluebunch wheatgrass, Idaho fescue, Indian ricegrass, or squirreltail. Older plants of these species present in the interspaces are in very poor vigor. Some portions of entire plants are dead or dying. In some places these plants are almost nonexistent, except when growing in sagebrush or other places which protect them from grazing use. In some areas, most of the topsoil has been lost and remaining soil is held only

by pedestals of live plants, or dead and dying plants, or roots of these plants. Some areas are in an advanced stage of depletion with low productive capacity.

As elevation and distance from water increases, sagebrush areas generally become more stable. Areas with a static trend have no clear indications of either a downward or upward trend. This is evidenced by moderate vigor of bluebunch wheatgrass, Idaho fescue, Indian ricegrass, squirreltail, and sandberg bluegrass. There is no substantial reproduction of these grasses or of the undesirable plants. There is generally moderate movement of surface litter, small amounts of active erosion, and little visual evidence of either healing or deterioration.

In areas with an upward trend, bluebunch wheatgrass, Idaho fescue, Indian ricegrass, squirreltail, and sandberg bluegrass have good vigor, herbage production, and seedling establishment. There are generally few, if any, seedlings of undesirable plants for livestock use such as sagebrush and rabbitbrush. There is also evidence of litter accumulation; little, if any, pedestalling; and stable gullies.

Grass Type. The grass type (FIGURE 2-18), occurs primarily in the east-central portion of the unit on the gently sloping benches below the Challis National Forest boundary. This type comprises approximately 37,392 acres or roughly 10% of the unit. It is characterized by mixed grass stands interspersed or broken by shrub areas. Dominant grass species in this type are bluegrass (Poa) and needlegrass (Stipa).

FIGURE 2-18 GRASS VEGETATIVE TYPE. Ten percent of the Challis Unit is gently sloping benchland with this vegetative type. A stand of sagebrush occurs in the background near the canyon to the right.

Vegetative Species. The grass type occurs on gently sloping benches and flat areas at elevations of 5,000 to 6,000 feet. Little Antelope Flat and portions of Antelope Flat, located in Townships 11 and 12 North and Ranges 20 and 21 East, Boise Meridian, are characteristic of this type.

In the lower flat areas the type is characterized by the dominant sandberg bluegrass (Poa secunda). Desert ricegrass also makes up a significant portion of the stand in the same areas. As elevation increases, letterman needlegrass (Stipa lettermani) and needle and thread grass (Stipa comata) become dominant. Interspersed through the stipa in localized areas are small islands or fragmented areas of carex (Carex spp).

The grass type is broken by stringers of sagebrush, rabbitbrush, and associated species in and near depressions which make up the water

drainage system. Some portions of the type are dissected by major creek drainages which contain sagebrush, greasewood, rabbitbrush, halogeton, cheatgrass, spiny hopsage, and associated plants.

Near the major drainages and type transition zones, topography becomes gently rolling and moderately dissected. In these areas, north-facing slopes and some rolling ridgetops have the characteristic stipa aspect. Steeper, north-facing slopes have bluebunch wheatgrass and wildrye (Elymus ambigus). Sand dropseed is also abundant in the gently rolling areas with lesser amounts of Indian ricegrass, squirreltail, and sandberg bluegrass. Shadscale, rabbitbrush, budsage, whitesage, fringedsage, and various forbs such as eriogonum, phlox, aster, globemallow, astragalus, Russian thistle, and pepper weed also can be found. Phlox is a major understory forb species which is present throughout the type.

Range Condition. The grass type is mostly in fair condition (FIGURE 2-19) with some areas in poor condition and some in good condition. The majority of the type is apparently in fair condition due to drifting grazing use from May 1st to June 30th and again from November 1st to December 16th. Water is limited in the grass type and livestock do not use some areas or concentrate in other areas for any significant length of time.

FIGURE 2-19 GRASS TYPE RANGE IN FAIR CONDITION.
Pedestally of grass clumps can be observed.

Trend. Approximately 45% or 16,842 acres of the grass are in a declining trend, 54% or 20,280 acres stable, and less than 1% or 270 acres are in an upward trend.

Areas in downward trend (FIGURE 2-20) exhibit what appears to be a change from a poa/stipa association to a lower successional poa/small annual forb association (FIGURE 2-21). At lower elevations within the poa/stipa association, broken islands and isolated stands of dryland sedge (Carex spp) are present. Some winterfat, budsage, and other desirable plants are also present in relatively minor amounts. Carex stands and islands appear to be decreasing as evidenced by loss of soil around the islands (FIGURE 2-22). Some sagebrush and rabbitbrush seedlings are present. As elevation decreases to the more flatland areas, the poa secunda/annual forb association becomes more dominant. In these areas there is generally evidence of more soil loss and reduced

FIGURE 2-20 GRASS TYPE IN DOWNWARD TREND. Note low vigor of grass plants.

FIGURE 2-21 POA/SMALL ANNUAL FORB ASSOCIATION IN GRASS TYPE EXHIBITING DOWNWARD TREND. Note low vigor and diminishing ground cover.

FIGURE 2-22 CAREX STANDS AND ISLANDS.
Note selective grazing and soil disturbance by livestock.

production capacity. Some budsage and other desirable plants are present, but vigor is very poor. Where sagebrush is present in drainage patterns and other areas, there is an abundance of sagebrush and rabbitbrush seedlings. These plants are rapidly encroaching into the open poa grassland areas.

Grassland areas in stable trend, generally those areas away from water, may have some sagebrush, rabbitbrush, stipa, Indian ricegrass, and budsage seedlings. Along the northern portion of the type, sand dropseed may be intermixed with the stipa association.

Shadscale Type. The shadscale type (FIGURE 2-23) occurs near the valley bottoms primarily to the northwest, east, and southeast of the town of Challis. It occurs on droughty soils (usually gravelly, sandy

FIGURE 2-23 SHADSCALE VEGETATIVE TYPE.

loams) at elevations from 5,000 to 6,200 feet. This vegetative type consists of desert shrubs dominated by shadscale. Various grasses, such as Indian ricegrass, sandberg bluegrass, sand dropseed, and needle and thread grass are generally found in various combinations within the type. The shadscale type covers approximately 14,261 acres or about 4% of the unit.

Vegetative Species. The shadscale type grows mainly on the semi-arid valley lands and low-lying hills and foothills. This type is characterized by a sparse mixture of low shrubs and grasses with open spaces between the plants. Plant growth and herbage production is influenced markedly by annual precipitation, which is generally low (about eight inches annually). Major shrubs in this type are shadscale, budsage, and winterfat, with lesser amounts of nuttall saltbush (Atriplex nuttalli), Douglas rabbitbrush, horsebrush, black greasewood,

and sagebrush. Some four-winged saltbush (Atriplex canescens) and blacksage can also be found.

Major grass species are sand dropseed, squirreltail, Indian ricegrass, and letterman needlegrass. Some bluebunch wheatgrass, needle and thread grass (Stipa comata), sandberg bluegrass, rye grass, and cheatgrass can also be found. In localized areas, red three awn (Aristida longiseta) is abundant.

Forbs are characteristically inconspicuous in the shadscale type. Most obvious are phlox, halogeton, eriogonum, and Russian thistle.

Range Condition. The shadscale type is in poor (FIGURE 2-24) to fair condition. This type has a low productive capacity. Soils are generally calcareous with a high pH. Temperatures are high and precipitation is low. Vigor of most remaining desirable forage species in this type is low due to continuous spring grazing near the ranches.

FIGURE 2-24 SHADSCALE TYPE RANGE IN POOR CONDITION.

Sand dropseed is abundant in some portions of the type, while only remnants of other desirable forage species are present. Three awn grass, an undesirable species, is encroaching in many areas. A possible explanation for the presence of sand dropseed is that this grass is a warm season grass which completes its growth cycle in the hot months (June, July, and August) when summer rains occur. Usually livestock have been removed from the type at this time and sand dropseed has been able to complete its growth cycle.

Trend. Approximately 24% or 3,425 acres of this type are in a declining trend, 76% or 10,836 acres stable.

Important plants remaining in the shadscale type in a downward trend consist principally of sand dropseed and budsage with minor amounts of whitesage, Indian ricegrass, and squirreltail. Vigor of budsage, whitesage, Indian ricegrass, and squirreltail is very poor. Little, if any, reproduction of these species can be found where they are protected from grazing. Prickly pear cactus is present in varying amounts throughout the stand and there are numerous young plants indicating deteriorating range conditions. Halogeton seedlings can be found in some areas.

Areas in a stable trend have most of the same vegetation species present as areas in downward trend. Areas of stable trend, however, exhibit improved vigor of the desirable plants, and some plants such as Indian ricegrass and squirreltail can be found in interspaces between plants. There is generally little evidence of reproduction of either the desirable or undesirable plants for livestock use.

Most areas in a downward trend are adjacent to or near valley bottom farmlands.

The present trend in these areas appears at least partially due to unauthorized grazing use. As distance from farmlands and water increases, vegetative trends become more stable.

Wet Meadow Type. Wet meadows (FIGURE 2-25) occur mostly on gently sloping soils in small stream valleys and high mountain valleys where soil moisture is influenced more by runoff and seepage than precipitation. Most of the streams within the unit are bound by a meadow community dominated by willow thickets and a complex plant community composed of water-tolerant grasses and sedges, some forbs, and very few shrubs. The wet meadow type makes up approximately 2,994 acres or less than 1% of the area. Most meadow types are sensitive to disturbances and can be very difficult to restore once substantially altered.

FIGURE 2-25 WET MEADOW VEGETATIVE TYPE. The meadows are quite productive and important for wildlife. Note hummocking caused by livestock grazing.

Vegetative Species. The wet meadow type is dominated by grasses and sedges. Rhizomatous species are conspicuous. Total forage production yields are high and the plant community is complex. Grasses and sedges usually make up 70 to 80% of the vegetation with lesser amounts of forbs and fewer shrubs.

The wet meadow type may contain wiregrass, foxtail, reedgrass, cattail, sedges, and rushes. In addition, bluegrass, brome, timothy, ryegrass, needle grass, tufted hairgrass, wheatgrass, and other grass and grasslike plants may be found. A variety of forbs are generally present, including iris, aster, dandelion, yarrow, lupine, senecio, arrowgrass, potentialla, bullthistle, and others.

Principal shrubs are willow, rose, gooseberry, currant (Ribes spp), sagebrush, and rabbitbrush.

Quaking aspen (Populus tremuloides), water birch (Betula fontinalis), and cottonwood (Populus spp) can be found associated with the wet meadow type in some areas.

Range Condition. The present condition of the wet meadows is difficult to assess due to the complex plant communities. Most wet meadows receive heavy use by grazing animals. Meadows at the higher elevations appear to be used almost continuously when not covered with snow.

Wild horses make heavy use of the wet meadow type in the fall and early spring. Game animals also use these areas when other forage is dry to help provide their protein requirements.

The wet meadow type is very durable and seems to persist regardless of the heavy grazing use. Some meadows, however, show signs of deterioration. They would generally be classed as being in fair to good condition, based on amount of desirable and intermediate plant species present and their resistance to erosion.

Trend. Approximately 39% or 1,173 acres of this type are in a declining trend and 61% or 1,821 acres are stable.

Most meadows appear to be in a stable trend with some signs of deterioration. It is difficult to evaluate trend of the meadows due to their complexity. Most plants appear to have a high degree of resistance to grazing and maintain fair vigor. Reproduction is accomplished primarily through rhizomes, stolons, and vegetative tillering. Although there is little evidence of active erosion, some hummocking is present.

Currently, there is heavy grazing use of wet meadows by domestic livestock, wild horses, wild game animals, and birds. There is severe competition for the green grasses and available protein they provide, especially late in the season. Competition is expected to increase as the availability of forage decreases in other areas. Deterioration of the wet meadow areas is expected to accelerate with continuation of present grazing practices.

Mountain Mahogany Type. Curlleaf mountain mahogany stands (FIGURE 2-26), occur at elevations between 7,000 and 8,000 feet. They are found mostly on rocky outcrops or thin, gravelly soils. The most important mahogany stands are in the Willow Creek Summit area with other

less dense, small stands in the Lone Pine and Bishop Spring areas. Although mahogany stands make up less than 1% of the total vegetation within the unit, they are important for wildlife forage and cover, particularly during the winter months. The stands appear to persist because of the ability of the roots to penetrate fractured bedrock, and, their general resistance to fire.

FIGURE 2-26 MOUNTAIN MAHOGANY VEGETATIVE TYPE.
This type is important big game winter range.

Vegetative Species. Mountain mahogany occurs in relatively pure stands on rocky outcrops on thin, gravelly soils at middle elevations. The stands are generally next to or surrounded by big sagebrush, and species associated with the sagebrush type. In some locations, mahogany stands are immediately below the conifer type and may be associated with species common to the conifer type.

Mountain mahogany stands are dominated by mountain mahogany (Cercocarpus ledifolius), which gives them their chacteristic aspect.

Principal grasses associated with the type are bluebunch wheatgrass, Idaho fescue, and wildrye. Shrubs consist primarily of sagebrush, rabbitbrush, and snowberry (Symphoricarpus spp). Forbs are generally not abundant; however, phlox, yarrow, aster, lupine, and a variety of other species can be found.

Range Condition. The mountain mahogany type is in fair to good condition. It has been heavily used in the past, probably by domestic sheep as well as wild game animals. This is evidenced by the present highlined condition of the older plants. In some areas, reproduction of young plants of various age classes is present. There is little evidence of current grazing use on mountain mahogany and associated plants where reproduction is evident.

Trend. Approximately 73% or 2,553 acres of this type are in a stable trend and 27% or 935 acres in an upward trend. The stable and upward trends are evidenced by the number of mountain mahogany seedlings in the younger age classes. In general, there is little evidence of grazing use of these plants and they appear healthy, vigorous with good color, and produce abundant herbage.

Conifer Type. The coniferous vegetative type (FIGURE 2-27) is generally found at the middle and upper elevations from 6,000 to 10,000 feet. The type includes approximately 36,351 acres or about 10% of the

FIGURE 2-27 CONIFER VEGETATIVE TYPE. This type does not provide significant livestock forage.

total acreage in the unit. The occurrence of coniferous vegetation is strictly limited by the availability of moisture during the growing season. TABLE 2-17 shows the average of coniferous and commercial coniferous vegetation by proposed allotment.

The more vigorous stands occur on protected north- and east-facing slopes, whereas scattered, stunted stands or individual trees occupy the less protected south- and west-facing slopes. Stringers of conifers occasionally reach lower elevations, but only in the vicinity of drainages where sufficient moisture is available on a year-round basis.

The Douglas-fir (Pseudotsuga menziesii) type dominates the coniferous vegetation and is usually found in pure stands, but infrequently may be found with various understory species. The type is limited to the 6,000- to 9,000-foot zone by various climatic influences. Even-aged stands are common, but disturbances such as fire, windstorms, snowslides, and logging have often altered the age-class structure and

TABLE 2-17

ACREAGE OF CONIFEROUS AND COMMERCIAL CONIFEROUS
VEGETATIVE TYPE BY PROPOSED ALLOTMENT

Allotment Name or Area	Total 1/ Acreage	Conifer 2/ Acreage	Percent Conifer	Commercial 3/ Acreage	% Total Commercial Acreage
Bruno Creek	2,453	2,083	85	800	11
Thompson Creek	5,835	3,600	62	1,387	20
Bald Mountain	24,761	6,384	27	917	13
Sullivan Creek	4,945	880	18	--	--
Spud Creek	9,426	1,648	17	--	--
East Fork	15,000	2,544	17	--	--
Squaw Creek	8,820	1,872	16	300	4
Herd Creek	24,688	2,640	11	--	--
Pine Creek	4,294	416	10	--	--
Garden Creek	31,638	3,008	7	954	13
San Felipe-Peck Canyon	41,335	2,096	5	252	4
Warm Springs	109,141	4,864	4	660	9
Red Lake	25,332	4,270	17	1,821	26
Road Creek	16,074	128	1	--	--
Split Hoof	9,655	--	--	--	--
Round Valley	13,583	--	--	--	--
Frail Lands Area (no grazing)	10,784	220	2	--	--
TOTAL	357,764	36,653	10	7,091	100

1/ Source-Allotment Management Plan
2/ Source-Vegetative Type Map (MAP 2-10)
3/ Source-URA

created multi-aged stands. Lodgepole pine (Pinus contorta) is common to the west side of the unit and is the only other coniferous species found in abundance in the middle elevation zone.

Above the 9,000 foot elevation, the limber-whitebark pine (Pinus flexilus-albicaulis) type is characteristic. This type appears along or just below ridgetops in heavy snowfall areas.

Vegetative Species. The Douglas-fir forest type occupies about 33,785 acres or 93% of the coniferous acreage in the unit. Lodgepole pine, sometimes a seral species in this area, presently covers about 1,833 acres or 5%, and the limber-whitebark pine type the remaining 733 acres or 2%.

Although the various species mentioned above occur most frequently in pure stands, there tends to be a mixing along the west side of the unit in moist areas and at higher elevations. Englemann spruce (Picea engelmannii), subalpine fire (Abies lasiocarpa), aspen, and cottonwood (Populus spp) may also be found intermixed with both Douglas-fir and lodgepole pine along streams with cool air drainage. This occurs in the extreme west portion of the unit in the vicinity of Thompson, Squaw, and Kinnikinic Creeks. Another coniferous species infrequently found in the unit is common juniper which may be found among scattered Douglas-fir around exposed rocky sites in the lower and mid-elevations of the coniferous zone (Steele, et.al., 1975).

The Douglas-fir stands within the unit include several specific forest habitat types, most of which have been observed on the ground and include the following: Douglas-fir/mountain snowberry, Douglas-fir/ pine grass, Douglas-fir/common juniper, Douglas-fir/heartleaf arnica,

Douglas-fir/curlleaf mountain mahogany, Douglas-fir/Idaho fescue, and Douglas-fir/bluebunch wheatgrass.

Lodgepole pine, generally considered a seral species, occurs as a climax species on several sites in the unit. This is a rather unique phenomenon, and is thought to the be result of several factors, the most important of which appears to be nightly cold air accumulation with frequent summer frosts and droughty substrates that may have fluctuating water tables. It is believed that lodgepole pine remains dominant on these sites by default of the other conifers to replace it rather than superior specific competition (Steele, et.al., 1975). Specific lodgepole pine habitat types noted in the field include lodgepole pine/ pinegrass and lodgepole pine/heartleaf arnica.

The last major forest type occurring in the unit is the limber-whitebark pine type. It should be noted that these are two separate species, limber pine and whitebark pine. The only apparent difference between the two is cone characteristics. Limber pine is the common species in the unit, but whitebark pine does occur occasionally. The type is typically found at elevations above 8,000 feet and occurs between nonforest and Douglas-fir on drier sites as neither tree can out-compete the other for dominance (Steele, et.al., 1975). The type may be found in the Poverty Flat area on the west side of the unit above 9,000 feet elevation. The only forest habitat present is limber pine/Idaho fescue and it occurs with a heavy mixture of sagebrush, various grasses, and forbs. Minor amounts of subalpine fir are found in the upper Lake Creek drainage above Herd Lake.

Forage production within the type is highly variable depending on crown closure, but averages perhaps 100 to 150 pounds per acre (Ford, pers. comm., 1976). This averages about 16 acres per AUM, and with approximately 7,000 acres lending themselves to livestock use, the available forage within the type would amount to 437 AUMs. This is about 1-1/2% of the total forage production in the entire unit. However, it is estimated that current livestock use within the type is perhaps 50 to 100 AUMs.

Range Condition. The coniferous type is generally in fair to good condition. Grazing use by cattle is very light, primarily around the timber edges. Wild horses also use the timber edges for shade and rest. Bluebunch wheatgrass and Idaho fescue, the major forage grasses, are associated with the conifer type.

Trend. The conifer type is generally stable with some areas trending upward. Vigor of desirable forage plants is generally good. There is evidence of reproduction in some areas. There is generally good litter accumulation and absence of pedestalling and active erosion.

Other Areas. There are other highly variable vegetative types that occur mostly in the higher elevations. Some of these are very hardy, tough, durable, low-growth types found on the open ridges on very thin soils. Others are semiwet types where there are better and more fertile soils.

In some areas where soil and moisture conditions are favorable, portions of the native range have been artificially treated to increase forage production. Sagebrush has been killed (generally by spraying) to eliminate competition with the native grasses. Other areas have been sprayed and seeded, or plowed and seeded, primarily with crested wheatgrass (Agropyron cristatum). There has been a total of 4,972 acres of various types of vegetative manipulation projects in the unit. These consist of 2,400 acres of sagebrush spraying and seeding of crested wheatgrass; 1,042 acres of sagebrush plowing and seeding of crested wheatgrass; and 1,530 acres of aerial spraying of sagebrush. These projects were done in the San Felipe, Garden Creek, Maraffio, and Bradshaw grazing use areas. The average age of these treatments is twelve years, with the last completed in 1971.

Approximately 44,000 acres or 14% of the area has been classified unsuitable for livestock, either because it has no value for or should not be used by livestock. Such areas include rock cliffs and escarpments, barren areas, rockslides, steep slopes, unstable soils, etc.

Poisonous Plants. Four species of poisonous plants are known to occur in the Challis Unit: halogeton, death camas, larkspur, and water hemlock.

Halogeton is not abundant throughout the unit, but is found in small scattered patches, particularly in disturbed areas and along frequently graded roads at lower, drier elevations. It is found on Bradbury Flat near the junction of the road to Poverty Flat, Sink Creek, and the old Bower Ranch. It is also found on some roads in the Round

Valley Allotment, the road to Horseshoe Detention Dam, and along Warm Springs Creek.

Death camas is present early in the spring on some well-drained soil areas that receive abundant spring moisture. It has not caused significant animal losses to date.

Larkspur has caused problems in the upper Sink Creek drainage and measures have been taken to control it. Other areas have larkspur, but no incidents of poisoning have been reported.

Water hemlock is present but has not posed a problem.

Endangered, or Threatened Plants. The complex geologic history of east-central Idaho has contributed to an equally complex floral community. Several species are native (endemic) to the area and are not found elsewhere. Other species common to other areas have isolated populations thriving in the Challis area (disjunct). Endemic species thought to be endangered or threatened are of particular concern because they could not be reestablished if eliminated.

It is difficult to distinguish which plants within the Challis Unit are actually endangered or threatened. Two species are listed in both Wellner and Johnson (1974) and Steele (1975) as being not only endangered but as being endemic to the unit.

One of these species, wavyleafed thelopody (Thelypodium repandum) is listed as endangered on the proposed Federal list of rare and endangered flora. Specimens of this plant are included in the herbariums of both Idaho and Washington State Universities. The species is recorded

as having been located eight to twenty miles south of Challis, found only on decomposing shale slopes of tributaries draining into the Salmon River, and growing in association with glandular phacelia (Phacelia glandulosa).

The second species endemic to the unit and considered endangered (Wellner and Johnson, 1974) is bessey pointvetch (also bessy's crazy-weed) (Oxytropis besseyi var. salmonensis). Specimens are maintained in the herbariums of Idaho and Washington State Universities. The only location where the plant has been observed is in the vicinity of Spar Canyon about twenty miles east of Clayton.

Dr. Karl Holte, Associate Professor of Botany in the Biology Department of Idaho State University, was hired as a consultant for two days, and in the company of an EIS team member, searched for both species in the field. The wavyleafed thelopody (FIGURE 2-28) was found in two areas and several specimens were observed in both the immature and mature stages. The initial location was in the area described in Hitchcock, et.al., (1971), about eight miles south of Challis on a very steep, decomposing shale slope on the west side of the Salmon River near the mouth of Wood Creek. The second location was adjacent to the Spar Canyon Road on a steep, southeasterly-facing slope comprised of decomposing Challis volcanic rock. Only immature plants were found at this location and their presence was probably the result of the above-normal fall rains and unusually warm weather. Bessey pointvetch was searched for, but could not be positively identified, although plant parts with its characteristics were found. If present this past spring, the plants

had deteriorated beyond recognition. Dr. Holte's report is available upon request from the BLM Idaho State Office - Boise, Idaho.

During subsequent field trips, wavyleafed thelopody was found at previously undescribed sites. These include Herd Creek, where the plant was abundant in one area, upper Malm Gulch, and Bayhorse Creek, where the plant was also abundant. Because several sightings were made, it is tentatively concluded that the plant is viable and reproducing in sufficient numbers to maintain itself.

FIGURE 2-28 WAVYLEAFED THELOPODY, AN ENDANGERED PLANT ENDEMIC TO THE CHALLIS UNIT. This plant found in several locations throughout the unit commonly grows in shale outcrops. Few of the plants were utilized by animals.

Locoweed (Astragalus ammisamissi), silene (Silene scaposa var. lobate), and bladderpod (Lesquerella carinata), included in the proposed Federal list and in Wellner and Johnson (1974), are reported to be in the general area of the unit. Locoweed is classed as endangered on the Federal list and as rare, but not endangered in Wellner and Johnson. Silene and bladderpod are classed threatened on the Federal list, and as rare but not endangered in Wellner and Johnson. Other species found in the proposed Federal list that Steele (1975) mentions as having been found in Custer County, but not necessarily in the unit, include chaenactis (Chaenactis evermannii) and hymenopappus (Hymenopappus filifolius var. idahoensis). Chaenactis was tentatively identified by Dr. Holte as being present in the unit, but the late collection date precluded a positive identification. Another species endemic to the area and listed in Wellner and Johnson (1974) as rare and threatened is ricegrass (Oryzopsis swallenii). This species has been positively identified as being present in the Antelope Flat area on the unit (Englebright, pers. comm., 1975).

Many other species are considered uncommon in the Challis area but not endangered or threatened (Wellner and Johnson, 1974). One such species observed in the field was Cryptantha (Cryptantha salmonensis). This species is endemic to the area and was found growing in association with wavyleafed thelopody.

Terrestrial

General

Each of the six vegetative types found within the Challis Planning Unit, i.e., sagebrush-grass, grass, shadscale, mountain mahogany, conifer, and wet meadow, consists of a variety of plant species which provide food and cover for numerous species of animals. Some animals are associated with a particular plant community or vegetative type, while others are more wide-ranging. Three introduced game birds reside within the unit: the chukar, Hungarian partridge, and ring-necked pheasant. TABLE 2-18 shows some of the more typical animals and birds found in the different vegetative types at different seasons of the year. TABLE 2-19 contains estimated numbers of major game species by proposed allotment. A list of wildlife species which may be found in the unit during a given year is available upon request from the BLM Idaho State Office - Boise, Idaho. Wild horses utilize several allotments and are discussed in detail later in this section.

Considerable information on life history requirements and habitat use by deer, elk, antelope, bighorn sheep, and some of the upland game birds is available in the Unit Resource Analysis in the Salmon District Office. Only the pertinent information is summarized in this report. Very little is known about food requirements, breeding habits, distribution, life cycles, population trends, carrying capacities, or key habitats of most smaller creatures such as rodents and songbirds.

TABLE 2-18

WILDLIFE SPECIES TYPICAL OF VEGETATIVE TYPES IN THE CHALLIS UNIT

Typical Wildlife Species	Vegetative Type: Sagebrush-grass	Grass	Shadscale	Mountain mahogany	Riparian	Conifer
Season of Use: W = Winter, S = Summer, Y = Yearlong						
Mule deer	Y			Y	S	Y
Elk	W	W		W		Y
Antelope	Y	Y	Y			
Bighorn sheep	W	W		W		
Black bear						Y
Mountain lion				S		S
Lynx						S
Pine marten						Y
Red squirrel						Y
Porcupine						Y
Mink					Y	
Muskrat					Y	
Raccoon					Y	
Beaver					Y	
Chipmunk	Y	S	S	S	Y	Y
Mountain vole						Y
Weasel	Y	S		S	Y	Y
Grasshopper mouse		Y				
Northern pocket gopher		S				
Sagebrush vole	S					
Richardson's ground squirrel	S	S	S			
Shrew	S	S			S	
Mountain cottontail	Y	Y			Y	Y
Black-tailed jackrabbit	Y	Y	Y			
White-tailed jackrabbit	Y	Y				
Coyote	Y	Y	Y	Y	Y	Y
Sage grouse	Y	S				
Blue grouse	S				S	Y
Chukar	Y	S	Y			
Mourning dove	S	S	S		S	
Meadowlark	S	S	S			
Horned lark	Y	Y				
Vesper sparrow		S				
Black-capped chickadee				Y	Y	Y
Downy woodpecker					Y	Y
Killdeer					S	
Phalarope					S	
Yellow-rumped warbler					S	
Western rattlesnake	S	S	S		S	S
Sagebrush lizard	S	S				
Short-horned lizard		S				

TABLE 2-19

ESTIMATED NUMBERS OF MAJOR GAME ANIMALS BY PROPOSED ALLOTMENT IN THE CHALLIS UNIT

Allotment	Deer	Antelope	Bighorn Sheep	Elk	Blue Grouse	Sage Grouse	Chukars
Red Lake	S 90 W 300	Y 100	None	None	Few	Many	Few 1/
Herd Creek	S 40 W 200	S 30	None	W 5-25	Many	Many	Few
Road Creek	S 5- 15 W 200-250	S 40- 80	W 5-10		Many	Many	Many
Bruno Creek	S 50 W 25			Few	Many	None	None
Round Valley	S 10- 25 W 50-100	Y 50- 75	None	None	None	Few	Many
San Felipe/ Peck Canyon	S 200 W 50	Y 200 W 300	None	W 25-50	Many	Many	Many
Warm Springs	S 50-100 W 500-600	Y 500-700	None	W 140-175	Many	Many	Many
Garden Creek	S 10- 30 W 350-450	Y 30	W 15-30	Few	Few	Many	Many
Bald Mountain	S 25- 50 W 300-450	Few	None	None	Many	Few	Many
Thompson Creek	S 50- 75 W 75-100	None	None	Few	Many	Few	Few
Split Hoof	S 20- 40 W 150-200	Y 40- 60	None	None	Few	Few	Few
Squaw Creek	S 25- 50 W 100-150	None	None	Few	Many	Few	Many
Spud Creek 1/	S 50- 75 W 75-125	Y 40- 60 W 75-125	None	W 20	Many	Many	Many
Pine Creek	S 10- 20 W 75-100	Few	None	Few	Many	Few	Few
East Fork	S 25- 50 W 200-300	Y 30- 50	W 40-60	Few	Many	Many	Many
Sullivan Creek	S 10- 20 W 40- 50	None	None	None	Many	Few	Few

1/ S = Summer W = Winter Y = Yearlong

None: Elk use in the proposed Pine Creek, East Fork, Herd Creek, Bruno Creek, Squaw Creek, Garden Creek, and Spud Creek Allotments consists of only a few elk that may pass through the area enroute to other areas, or occasionally winter in very small numbers at the upper edges of the allotments. The areas used are not classified as critical elk habitat.

Specific

Big Game. Mule deer, bighorn sheep, pronghorn antelope, elk, black bear, and mountain lion are the big game species present in the unit. Each of the large grazing mammals has specific grazing preferences and normally eats certain species of plants that are seldom used by the other animals. Certain plants are also more palatable, more abundant, or more nutritious at different seasons.

APPENDIX 2-B shows the degree of overlap in feeding habits of horses, cattle, elk, deer, and antelope on the unit, as analyzed by droppings at different seasons. Significant overlaps include: 78% between antelope in summer and deer in winter, 78% between antelope in winter and deer in winter, 68% between cattle in summer and horses in spring, 40% between cattle in winter and horses in winter, 20% between elk in winter and horses in winter, 31% between elk in winter and deer in winter, and only 10% between antelope in winter and elk in winter. (A 78% overlap means that, of the total number of species of plants eaten by two different species of animals, 78% of the total species of plants eaten will be utilized by both species of animals).

Fecal samples analyzed during this study (Hansen, 1975) indicate that deer feed predominately on sagebrush in winter with significant amounts of mountain mahogany also being used. A separate study by Lauer (1975) indicates that bighorn sheep in the proposed East Fork Allotment live primarily on bluebunch wheatgrass, mountain mahogany, and sagebrush in winter, with wheatgrass predominant (see TABLE 2-20 for comparison of diets between deer and bighorns).

TABLE 2-20

PERCENT OF DIFFERENT VEGETATION TYPES EATEN BY DEER AND BIGHORN SHEEP FROM NOVEMBER THROUGH APRIL 1966-67, MORGAN CREEK STUDY AREA, MORGAN CREEK ALLOTMENT 1/

	November %	December %	January %	February %	March %	April %	Total %
GRASSES AND GRASS-LIKE PLANTS							
Bighorn Sheep	61	62	66	67	75	83	69
Deer	11	16	12	14	34	61	24
FORBS							
Bighorn Sheep	8	7	5	2	1	3	4
Deer	20	17	11	15	7	16	15
BROWSE							
Bighorn Sheep	31	31	29	31	24	14	27
Deer	69	67	77	71	59	23	61
Total Observations	4,339	5,681	3,911	4,774	5,890	6,663	31,298

1/ (Morgan, 1969).

In the winter-spring period, elk were feeding primarily on mountain mahogany, sagebrush, and two species of grasses. During the same period, antelope were eating mostly sagebrush and saltbrush. During the spring, deer feed largely on grasses and early-developing forbs. While antelope have been feeding mostly on sagebrush during the winter, they begin feeding mostly on grasses and forbs in the spring. Competition for grasses between deer and bighorn sheep is greatest in early spring when both species relish the new green growth.

The various grazing animals tend to separate themselves somewhat naturally in both summer and winter, but here again there is considerable overlap at certain seasons. Antelope are generally found alone on their summer and winter ranges, but deer and elk are frequently found using the same winter ranges as are deer and bighorn sheep. Feral horses tend to separate themselves from most other grazing animals, but where isolated areas no longer remain, they may be found near cattle, deer, or antelope.

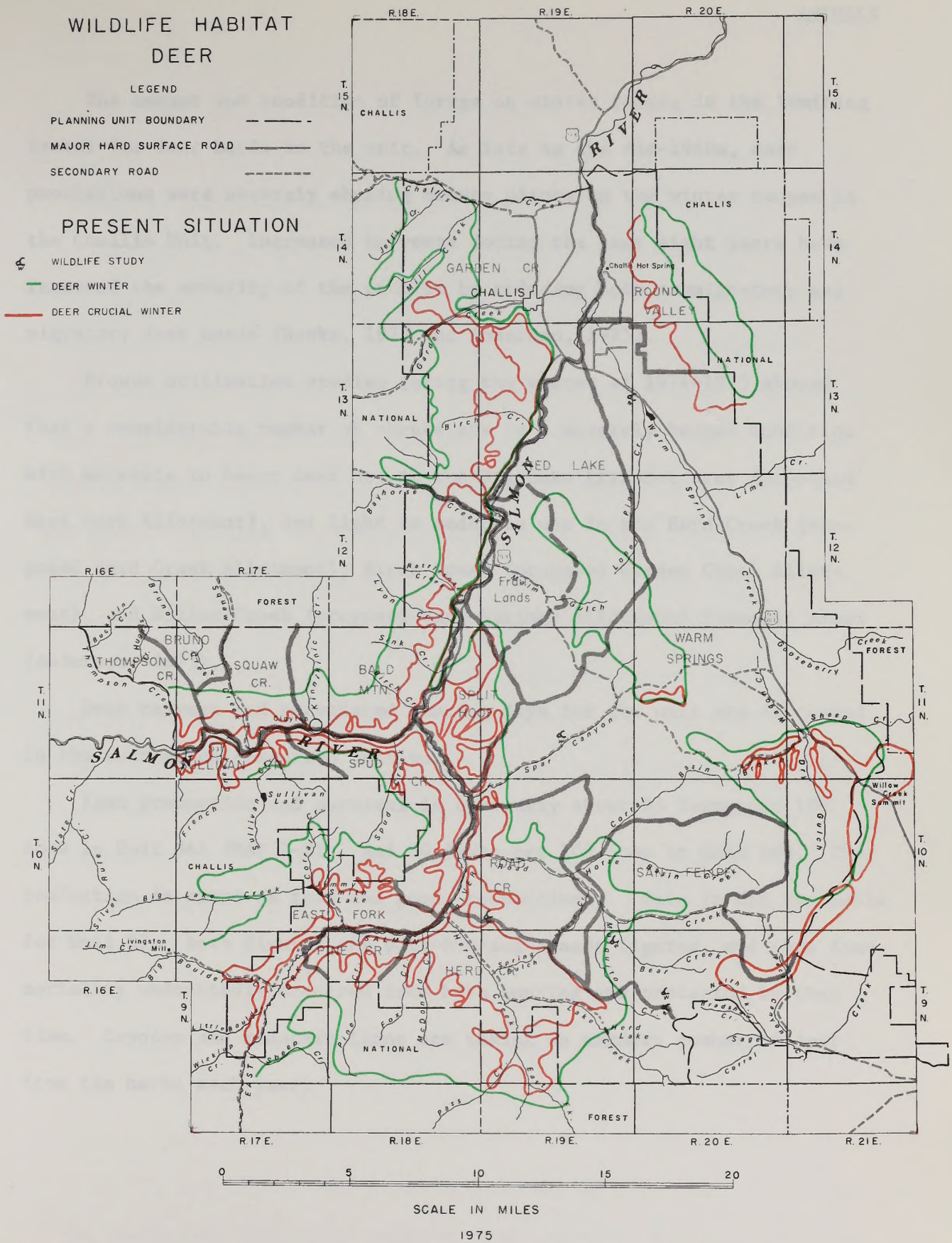
Mule Deer. While deer are predominantly found in sagebrush-grass, mountain mahogany, and conifer types in the unit, there are also small, local deer populations, consisting of from one to five individuals, in riparian habitats at widely scattered points along rivers and streams at the lower elevations. There are only about 300 to 500 resident deer in the unit, with about 2,000 additional deer migrating from the higher National Forest Lands to use the winter ranges within the unit (Anderson and Bodie, pers. comm., 1975).

During open winters, deer inhabit south-facing slopes up to 8,500 feet in elevation. More severe winters concentrate the animals below 6,500 feet.

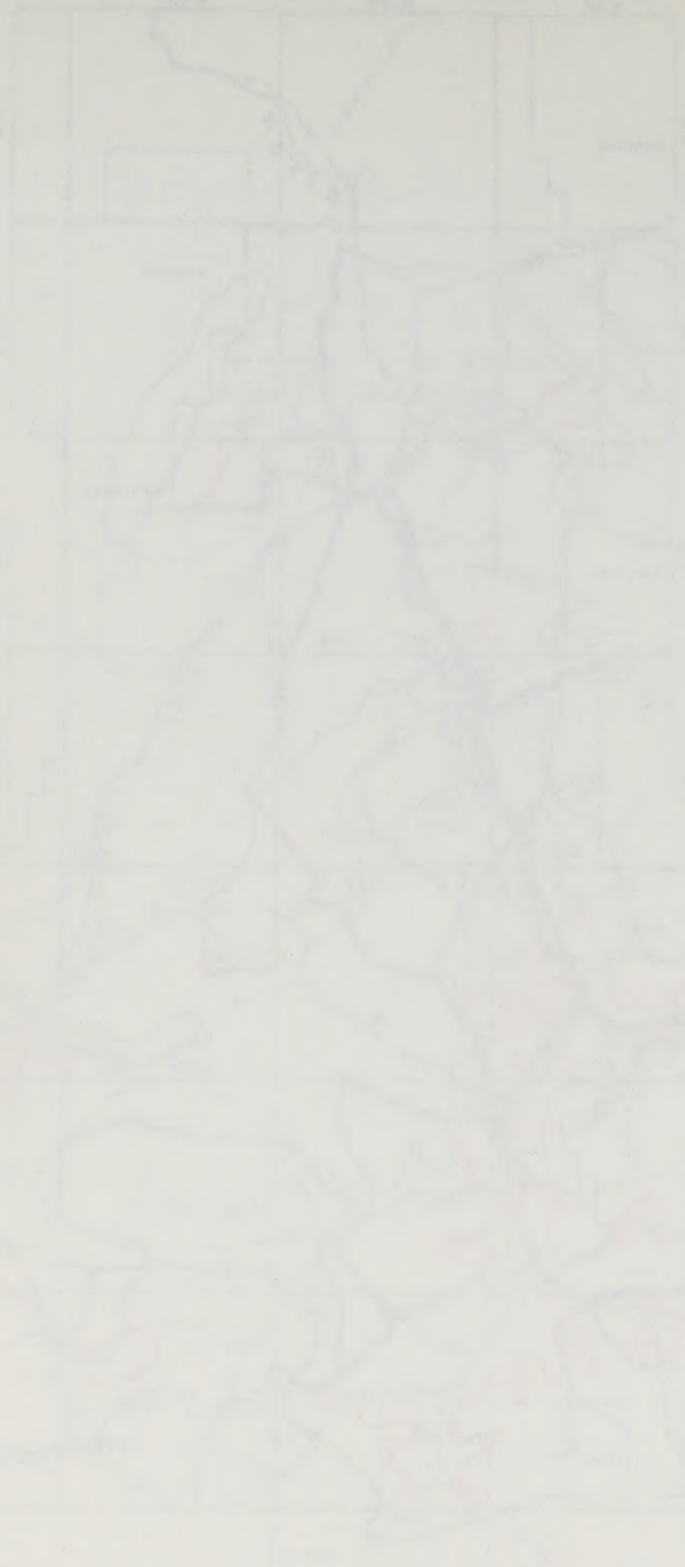
APPENDIX 2-C presents data on estimated numbers of big game in the various proposed allotments and pastures of the planning unit and also the condition of their critical habitats. Of the 53,988 acres of deer winter range classified as critical habitat in the Challis Unit, 26,111 acres (48.4%) are classified as being in poor condition, 25,992 acres (48.1%) are classified as being in fair condition, and 1,885 acres (3.5%) are classified as being in good condition. The proposed allotments containing the highest percentages of poor condition habitat are Garden Creek (64%), Thompson Creek (60%), Spud Creek (71%), East Fork (71%), and Pine Creek (78%).

The most heavily used deer winter ranges lie along the western borders of the unit, primarily in the foothills adjacent to the Salmon River (proposed Garden Creek, Squaw Creek, and East Fork Allotments), as well as the benches around Lone Pine Peak (proposed Red Lake Allotment), and both sides of Willow Creek Summit and adjacent canyons to the west (proposed Warm Springs Allotment) (MAP 2-13). Ranges in the Round Valley (proposed Round Valley Allotment), Lone Pine Peak, and Willow Creek Summit areas are not being utilized heavily by deer at present because of their relatively low numbers. However, use by wild horses around Lone Pine Peak and elk in the Willow Creek Summit areas are largely compensating for reduced deer use in recent years.

In addition to licensed livestock grazing use, trespass use for the past several years in the proposed Garden Creek, Squaw Creek, and East Fork Allotments, especially at the lower elevations where site potential is lowest, has resulted in increased range deterioration (Hawks, 1973 and Anderson, 1975).



MAP 2-13 IMPORTANT DEER WINTER RANGE IN THE CHALLIS PLANNING UNIT.



The amount and condition of forage on winter ranges is the limiting factor for deer herds in the unit. As late as the mid-1960s, deer populations were severely abusing browse plants on the winter ranges in the Challis Unit. Increased harvests during the past eight years have lessened the severity of the problem by reducing both nonmigratory and migratory deer herds (Hawks, 1973 and Anderson, 1975).

Browse utilization studies during the winter of 1974-1975 showed that a considerable number of shrubs are in a severely hedged condition with moderate to heavy deer use in the Big Lake transect area (proposed East Fork Allotment), and light to moderate use in the Herd Creek (proposed Herd Creek Allotment), Birch Creek (proposed Garden Creek Allotment), and Willow Creek (proposed Warm Springs Allotment) transect areas (Anderson, 1975).

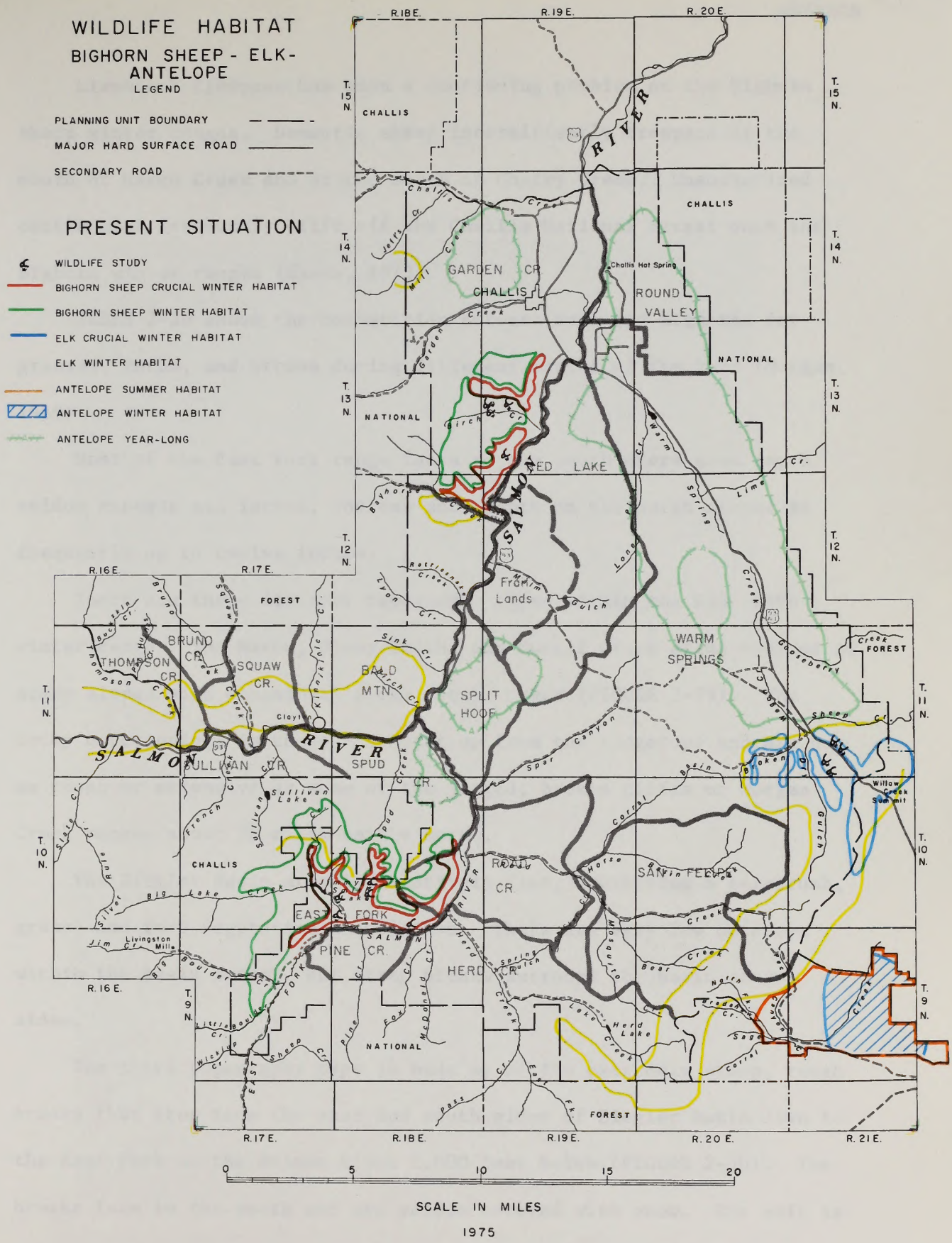
Deer harvest and associated hunting days for the unit are discussed in the Recreation Resources Section.

Fawn production and survival is currently about 63 fawns per 100 does in Unit 36A (MAP 2-21), and 80 fawns per 100 does in Unit 36B. This production is rated as fair and good, respectively. Data is not available for Unit 37. Both figures are post-hunting season figures, and some fawn mortality undoubtedly occurred from both hunting and predation by that time. Coyotes and mountain lions are taking an unknown number of deer from the herds each year.

Bighorn Sheep. Two bands of Rocky Mountain bighorn sheep utilize the unit (MAP 2-14), one on the East Fork of the Salmon River (proposed East Fork Allotment) and the other in the Birch Creek Area (proposed Garden Creek Allotment). The East Fork herd of approximately 50-70 animals arrives on the national resource lands (NRL) at the beginning of the breeding season during late October or November. They spend the winter and early spring between Big Boulder Creek and Joe Jump Basin on the north side of the East Fork. By May, most ram and dry ewe groups have moved up to Railroad Ridge on the Challis National Forest enroute to higher summer range. By mid-June the pregnant ewes have lambed and together they travel to summer areas in the White Cloud Peaks. The distance between winter and summer ranges is about sixteen miles. As fall returns, the cycle repeats itself.

Winter range is much more limited than summer range for this herd. Winter ranges are on low elevation, low precipitation (seven to ten inches) areas where vegetation production is much lower than on summer ranges. Because of joint use by domestic livestock (both authorized and trespass), deer, elk, and bighorn sheep, the crucial bighorn winter ranges have been seriously abused.

Of the 7,139 acres in the Challis Unit classified as critical winter range for bighorn sheep, 3,205 acres (44.9%) are classified as being in poor condition, 3,827 acres (53.6%) are classified as being in fair condition, and 107 acres (1.5%) are classified as being in good condition. About 60% of the Ziegler Basin pasture and 55% of the proposed East Fork Allotment bighorn sheep ranges are classified as being in poor condition (APPENDIX 2-C).



MAP 2-14 IMPORTANT WINTER RANGES OF BIGHORN SHEEP AND ELK AND YEAR-LONG RANGES FOR ANTELOPE IN THE CHALLIS UNIT.

Livestock trespass has been a continuing problem on the bighorn sheep winter ranges. Domestic sheep intermittently trespass at the mouth of Marco Creek and at the mouth of Cherry Creek. Unauthorized cattle also frequently drift off the Challis National Forest onto the bighorn winter ranges (Hawks, 1973).

TABLE 2-20 shows the competition between deer and bighorns for grasses, forbs, and browse during different months of the year (Morgan, 1969).

Most of the East Fork range faces to the south where snow depth seldom exceeds six inches, whereas snow depth on the north slopes is frequently up to twelve inches.

There are three distinct topography types within the East Fork winter range. The Marco, Jimmy Smith, and Corral Creek areas consist of steep slopes with occasional rocky escape cover (FIGURE 2-29). The rocky outcroppings in these areas jut up from the ridgetops and are not as rough or extensive as some of the jagged, broken cliffs on Morgan Creek ranges about 30 miles to the north.

The Ziegler Basin area is relatively flat, exhibiting a sagebrush, grass, and forb vegetative association. There are very few outcrops within the basin proper, but steep breaks surround the basin on two sides.

The third topography type is made up of the extremely steep, rough breaks that drop from the east and south sides of Ziegler Basin down to the East Fork of the Salmon River 2,000 feet below (FIGURE 2-30). The breaks face to the south and are seldom covered with snow. The soil is

very loose and rocky, tending to slide down into the many steep gullies farther downhill. Plant growth is very sparse. Nevertheless, the breaks are frequently utilized by bighorn sheep in winter.

FIGURE 2-29 ROCKY COVER NORMALLY USED BY BIGHORN SHEEP IN WINTER NEAR MARCO CREEK IN THE EAST FORK ALLOTMENT. Rocks provide sheep escape cover from predators.

FIGURE 2-30 CLIFFS AND ROCKY BREAKS ALONG THE EDGES OF ZIEGLER BASIN ARE NORMAL WINTERING AREAS FOR PART OF THE EAST FORK BIGHORN HERD.

A small herd of approximately 25 bighorns winter in the Birch Creek area (MAP 2-14), primarily between Bayhorse Creek and the foothills of Blue Mountain. They migrate to the west about six miles to summer in the Buster Lake region of the Challis National Forest. Timing is about the same as with the East Fork migration. No hunts have been held on this herd since the mid-1960s.

Bighorn habitat in the Birch Creek area varies from rolling hills to steep talus slopes, rock cliffs, and rough mountain ridges (FIGURE 2-31). Elevation ranges from 5,200 feet to 8,300 feet at the top of Blue Mountain. Sufficient snow accumulates to restrict winter range use to below 6,500 feet on the south-facing slopes.

FIGURE 2-31 RUGGED WINTER RANGE USED BY THE BIRCH CREEK BIGHORN HERD IN THE PROPOSED GARDEN CREEK ALLOTMENT.

Vegetative types present in this area include sagebrush-saltbush at the lowest elevations; and sagebrush-grass, grass, mountain brush, and conifer forest at higher elevations. Plants of major importance include big sagebrush, black sagebrush, low sagebrush, mountain mahogany, and

bluebunch wheatgrass. Bluebunch wheatgrass and mountain mahogany are the two key species for bighorns but only make up a small percentage of the total species composition in this area where the total ground cover is only 10 to 30%.

Recent studies indicate the East Fork herd lamb crop is about 60%, or 60 lambs per 100 ewes, which is considered fair to good.

Elk. The Challis Planning Unit has two primary areas of elk winter habitat - Willow Creek Summit and adjacent canyons, and the west side of the Salmon River in the Thompson Creek drainages. Only a few individual elk occasionally use the higher mountain areas of NRL in summer.

The Willow Creek Summit winter range, including the Dry Gulch and Broken Wagon Creek Drainages (proposed Warm Springs Allotment) (MAP 2-14); presently supports a herd of approximately 150 elk from mid-December to mid-May. The topography consists of moderately steep hillsides with large stands of mountain mahogany on each ridge and upper hillside. Primary forage species are mountain mahogany and bluebunch wheatgrass. Nonuse of part of the permit by the grazing licensee has permitted the area to reach a condition classification of fair. The elk are believed to summer either in the Lost River Range to the east, or to the south in the Herd Creek high country.

Of the 1,977 acres classified as critical winter habitat for elk in the proposed Warm Springs Allotment, 228 acres (11.5%) are classified as being in poor condition, 1,206 acres (61.0%) are classified as being in fair condition, and 543 acres (27.5%) are classified as being in good condition (APPENDIX 2-C).

Snowmobile activity appears to be increasing in the vicinity of Willow Creek Summit. Disturbance by these machines sometimes causes elk to travel two or three miles from their normal use areas.

Approximately 50 elk use NRL between Bayhorse Creek and Thompson Creek (proposed Squaw Creek Allotment) in severe winters. They do not use this area every year and little is known about their year-round use areas. The Cyprus Mine development in Thompson Creek causes some disturbance of elk using this area.

Elk production in Unit 36A (MAP 2-21) is considered to be good, but only fair in Unit 36B. Location of elk calving grounds in these two areas is unknown.

Pronghorn Antelope. Numerous small bands of antelope are scattered throughout the unit in the sagebrush-grass and shadscale types (MAP 2-14), with about 1,100 antelope in the unit yearlong.

Many antelope spend their time in the lower valleys and basins of the unit, but other bands move upward in summer to mountain slopes and ridgetops over 9,000 feet in elevation. A summer herd of 32 antelope was observed in September, 1975 on Railroad Ridge just west of the unit at an elevation of 10,400 feet. These animals descend to lower elevations near the mouth of the East Fork to winter on the unit.

While not abundant, antelope appear to be maintaining static populations. No defined fawning grounds have been identified for any of the bands within the unit.

Of the 56,122 acres classified as yearlong range for antelope, 22,105 acres (39.0%) are classified as being in poor condition, 25,323

acres (45.0%) are classified as being in fair condition, and 8,694 acres (16.0%) are classified as being in good condition. Of the 26,612 acres classified as primarily summer range for antelope, 6,272 acres (24.0%) are classified as being in poor condiiton, and 6,932 acres (26.0%) are classified as being in good condition. Yearlong ranges in the proposed East Fork, Maraffio, Woolley, Red Lake, and Garden Creek Allotments; and summer ranges in the proposed Road Creek Allotment and Spring Basin and Spar Canyon Pastures of the proposed Warm Springs Allotment are generally in poor condition with respect to antelope habitat needs.

Some of the higher ranges such as Corral Basin and Horse Basin in the proposed Warm Springs and San Felipe Allotments, respectively, are in good condition, partly because of relatively high site potential. The winter ranges (and summer ranges at lower elevations) are generally sites of low productivity that have been heavily used by livestock and are in poor condition. A few antelope use areas, including Birch Creek, the mouth of the East Fork, Road Creek, and Cherry Creek, are livestock trespass problem areas (Hawks, 1973).

Existing fences in the unit do not appear to interfere with seasonal antelope movements, primarily due to the fact that the unit is grazed almost entirely by cattle instead of sheep which would require tighter fences.

Black Bear and Mountain Lion. Bears occasionally utilize the western and southern edges of the unit, usually keeping to the higher, more undisturbed areas. They are few in number and seldom observed except during the early fall when they are sometimes found in berry

patches along creek bottoms. Mountain lion numbers are also small in the unit, but there seems to be emigration from outlying areas and nearby wilderness areas to supply hunters with animals to harvest during open season. Population and harvest estimates are not available.

Small Mammals and Reptiles. No population estimates are available. The mountain cottontail occurs in all habitats within the unit that have brushy or rocky areas and is frequently harvested in conjunction with upland bird hunting. Both white-tailed and black-tailed jackrabbits occur in the unit where broken topography, rocks, and dry washes, along with sagebrush and other shrubs, provide them with protection from predators and harsh winter conditions. The population cycle of the black-tailed species is presently at a low ebb, forcing some of the larger predators to revert to other forms of prey. Jackrabbits are the primary prey for coyotes, but the large diversity of prey items utilized by coyotes allow them to survive despite low rabbit populations. Coyotes probably kill more deer during periods of low rabbit numbers.

Fur prices for both bobcats and coyotes are currently high, and they are sought by many for sport or profit. Other species of value for their furs, but not classified as furbearers, include the spotted skunk, raccoon, striped skunk, fox, short- and long-tailed weasels, lynx, and badger. Furbearers include the pine marten, muskrat, mink, river otter, and beaver. Thompson Creek, Lake Creek, and Road Creek contained active beaver colonies in 1973 (Hawks, 1973).

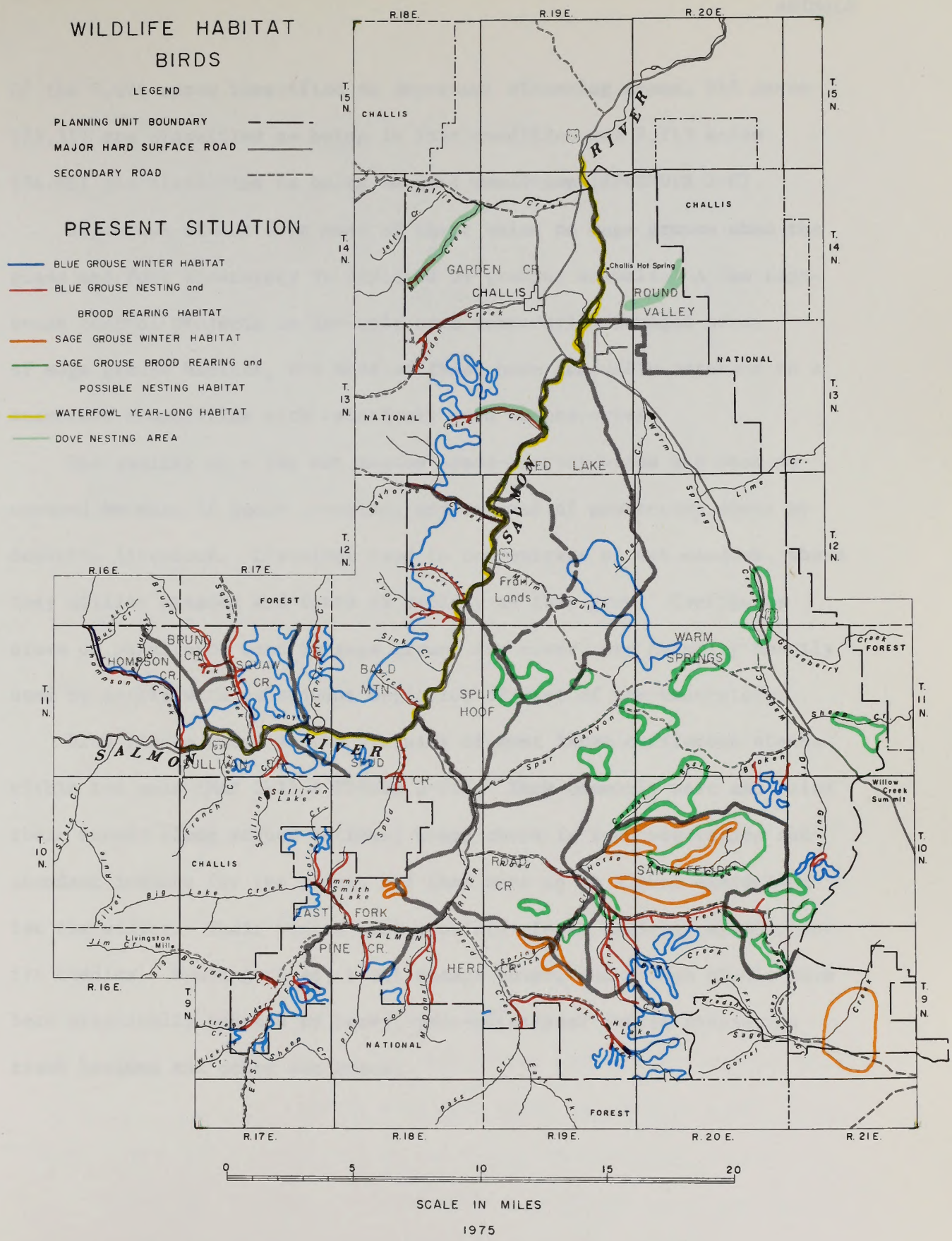
The majority of the small mammals are either herbivorous or insectivorous.

Reptile habitat in the unit does not appear to have been adversely affected by livestock grazing and is probably in satisfactory condition. Amphibians are found along watercourses and in marshy areas, beaver ponds, lakes, and reservoirs in the unit but their habitat status is generally satisfactory. They require permanent, unpolluted water in which to lay their eggs. Where excessive siltation or pollution occurs, suffocation of eggs and clogging of gill filaments may result. They are subject to the same influences that degrade fishery habitat.

Birds. No population estimates are available.

Upland Game Birds. Small, scattered populations of sage grouse occur throughout the Challis Unit, primarily along watercourses, around wet meadows, and in areas of good stands of sagebrush with grass understories (MAP 2-15). This bird is largely dependent upon sagebrush for food and cover with over 90% of its winter diet consisting of sagebrush leaves and seeds. There are no known locations of sage grouse strutting grounds within the unit, but the widespread distribution of grouse indicates there should be some in the area.

Of the 14,195 acres in the unit identified as important brood rearing or nesting habitat for sage grouse, 8,516 acres (60.0%) are classified as being in poor condition, and 5,676 acres (40.0%) are classified as being in fair condition. No areas are considered to be in good condition with respect to sage grouse habitat requirements.



MAP 2-15 IMPORTANT HABITAT FOR SAGE GROUSE, BLUE GROUSE, AND WATERFOWL IN THE CHALLIS UNIT.

Of the 3,626 acres identified as important wintering areas, 913 acres (25.5%) are classified as being in fair condition and 2,713 acres (74.8%) are classified as being in good condition (APPENDIX 2-C).

Sagebrush stands lose most of their value to sage grouse when the grass and forb understory is depleted by grazing animals. A few sagebrush control projects in the unit have temporarily damaged areas of sage grouse habitat, but most of these have gradually returned to a sagebrush composition with relatively good understories.

The quality of a few wet meadow brood-rearing areas has been decreased because of heavy trampling and removal of protective cover by domestic livestock. Livestock tend to concentrate on wet meadows, where they utilize grasses and forbs as rapidly as they grow. Contiguous areas of sagebrush, used by sage grouse for cover, are normally heavily used by cattle with subsequent depletion of most of the understory.

Blue grouse occur in the vicinity of most large coniferous stands within the unit (MAP 2-15 & FIGURE 2-32). They commonly nest and raise their broods along stream bottoms, where there is lush vegetation and abundant insects for the young, and then move up to higher elevations for the winter. Their winter diet consists almost entirely of Douglas-fir needles. Nesting cover, brook escape cover, and forage plants have been drastically reduced by heavy, year-after-year cattle grazing in creek bottoms and other wet areas.

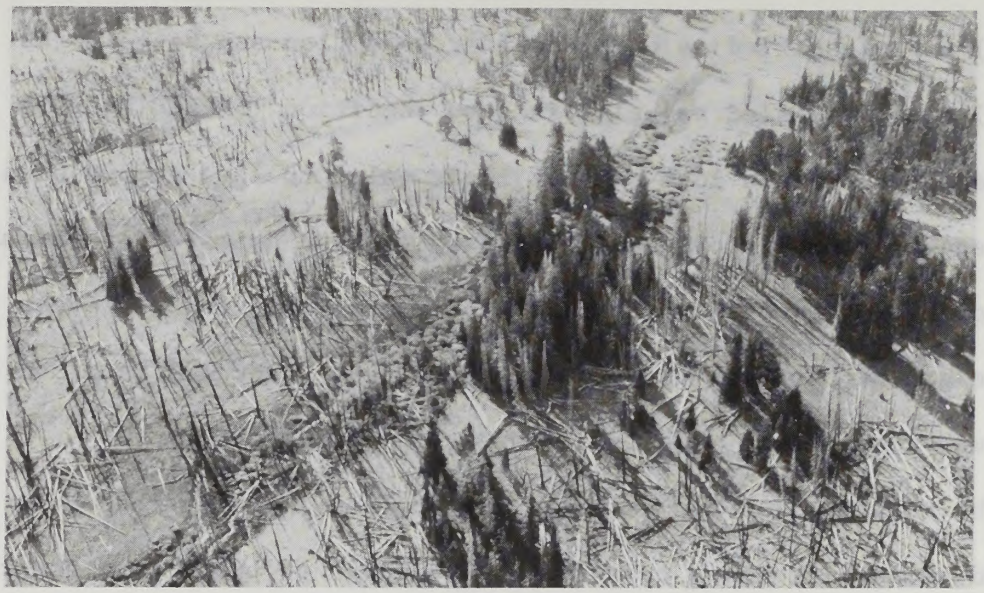


FIGURE 2-32 BLUE GROUSE HABITAT ON POVERTY FLAT IN THE PROPOSED SQUAW CREEK ALLOTMENT. Spruce-fir stands having a good supply of berry-producing forbs in the composition provide the best habitat for blue grouse.

Both ruffled and spruce grouse are believed to be present in the unit, but both are relatively scarce. Ruffed grouse prefer stream bottoms or wet areas and mountain brush or deciduous stands, both of which are common in the unit. Spruce grouse are more commonly found in lodgepole or subalpine fir stands, but occasionally have been seen in this area in Douglas-fir stands at higher elevations. Vegetative understory in the coniferous forest of the unit is relatively sparse.

Some logging has occurred in selected timber stands, and this may have improved those areas for ruffed and blue grouse by opening up small spaces where grasses and forbs grow more abundantly.

Chukars and Hungarian partridges may be found in the same localities because of the diversity of habitat sometimes utilized by chukars. Hungarians, however, are normally found around the valley agricultural

areas and adjacent foothills. Chukars are frequently seen in any of the rough, desolate canyons through the unit and are common along the breaks and foothills of both the Salmon and East Fork of the Salmon Rivers, as well as lower Road Creek. During late fall, both species concentrate where talus slopes provide escape cover and suitable forage, normally near water. When snow comes, the birds scatter in large flocks and winter on steep south slopes and rocky, windblown ridges. If snows become deep, or the winter especially severe, the birds will move down to roadsides and edges of feedlots to find bare areas where seeds and grasses may be available.

In spring, the Hungarians pair up and nest in brushy areas along streams or at the edges of cultivated fields. Chukars frequently nest on steep, rocky slopes having sparse vegetative cover.

Winter severity and spring temperature and precipitation patterns are believed to be the primary factors limiting production and survival of both species.

Habitat conditions are generally poor for mourning doves in the unit, but there are local areas of good populations. Highest densities of these birds occur in areas having interspersed trees or bushes or along wooded stream bottoms. Nesting occurs on bare ground, on rock ledges, in any kind of shrubby vegetation, or in deciduous or coniferous trees. Water is highly important.

Ring-necked pheasants are closely tied to farm lands and associated cultivated areas. A few birds use sagebrush lands adjacent to private lands, but national resource lands are not considered vital to their

survival. Practically all harvest of this species comes from private lands in the valleys. Pheasant populations are low throughout the area.

Waterfowl. The Salmon River provides most of the waterfowl stopover and wintering habitat in the unit. The river has relatively poor nesting sites because of water level fluctuations from spring runoff. There are a few ponds scattered on NRL throughout the unit, but most are small with very little emergent aquatic vegetation. Grain production on farm lands is also very low, so waterfowl food is not abundant. Therefore, the unit contributes only a very small amount of waterfowl to the Pacific Flyway.

Nongame Birds. Vegetative type, condition, and density are directly related to the species and populations of small mammals that serve as prey for the various birds of prey and are, therefore, directly related to the species and abundance of raptors present in the unit. A survey by Platt (1975) indicated that golden eagles were more frequently observed in areas of fair to good condition than in ranges of poor to fair condition. A study by the Craigheads (Craighead and Craighead, 1956) indicated that a lowering of the reproductive success in golden eagles can be expected if range condition is lowered significantly by overgrazing or natural disasters. The extent of this effect in the unit is unknown.

Peregrine falcons are the only raptorial birds known to have seriously declined in the unit. Nesting success of the other birds of prey depends largely on the prey base available during a given year.

A great blue heron rookery is located west of the town of Challis on private lands. While the birds are not tied directly to habitat on adjacent NRL, if disturbing activities were permitted on these lands, they could cause abandonment of the nesting site.

The six primary vegetative types in the unit provide habitat for a surprising variety of insectivorous and songbirds. Their needs relate directly to production and condition of vegetation for nesting sites and food. The majority of species are either seed or insect-eaters. There is no information on the densities, distribution, and limiting factors of songbirds within the unit.

Wild Horses. Based on information obtained during studies of wild horses on the Challis Planning Unit (BLM, 1975), and from historical records, it has been determined that they originated from feral horses. Herd boundaries established by the BLM in 1973 are indicated on MAP 2-16.

In 1971, at the time of the passage of PL 92-195, an inventory revealed 150 horses and 1 burro. Based on the 1975 inventory there are approximately 407 horses and 3 burros in the Challis Unit herd which consists of some 60 individual bands. The average band size is 7 but ranges from 1 to 21 animals.

The 1973-1975 inventories are the most accurate information available for computing rate of increase. In 1973, the population increased 28%, 29% in 1974, and 18% in 1975. Mortality has not been taken into account in these figures. The average annual increase for this three-year period would be approximately 25%.

The 1975 year reflects a low rate of increase. This may be due to several factors. The most significant is the late winter-early spring heavy snowfall and related cold weather. Many of the horses looked extremely weak and thin during this period.

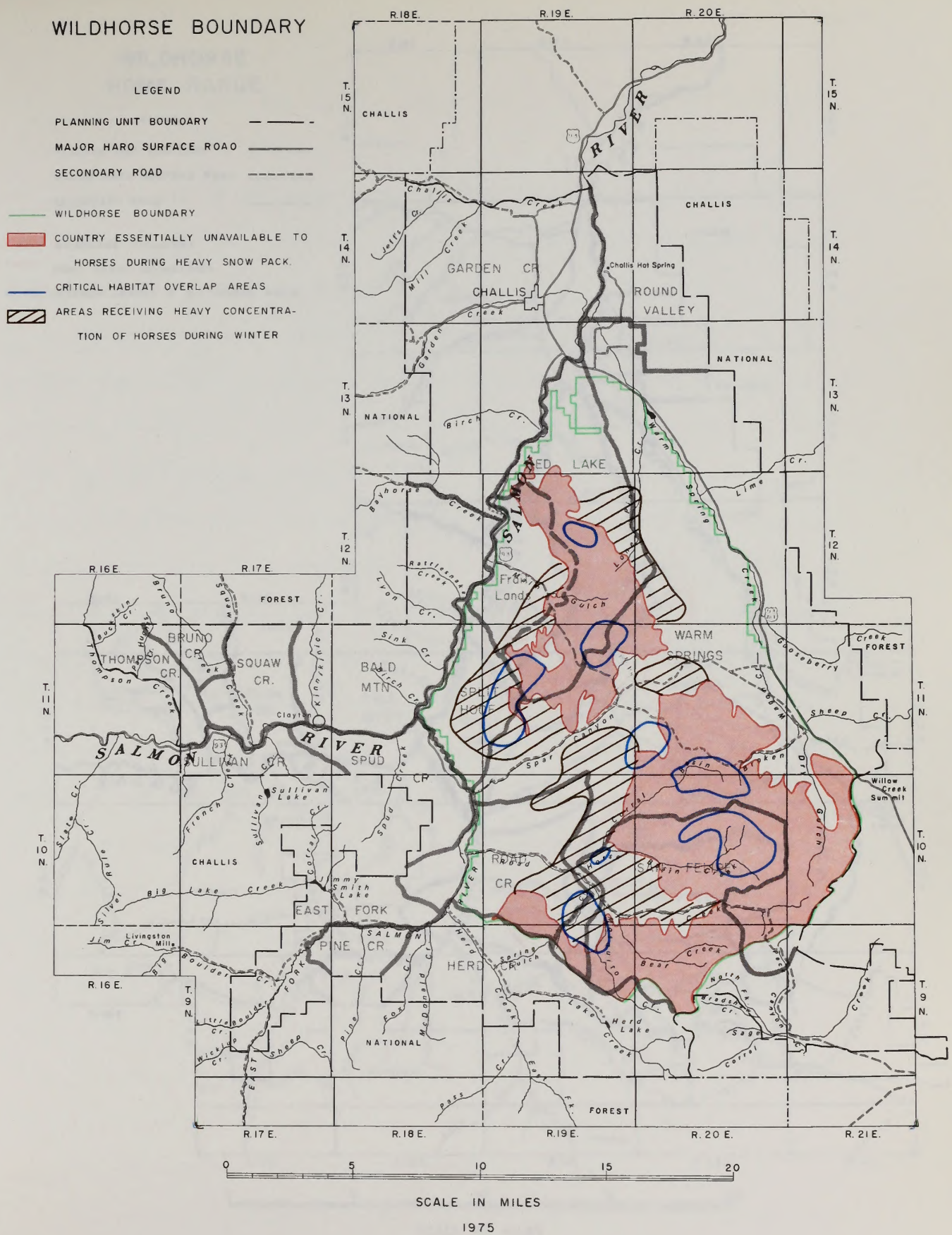
The sex ratio for the adult horse population appears to be 60% female and 40% male. This is an estimate based on direct observation.

An analysis of the age ratio of the population indicates that nearly one-half the horses now using the Challis wild horse range are two-year-olds or younger.

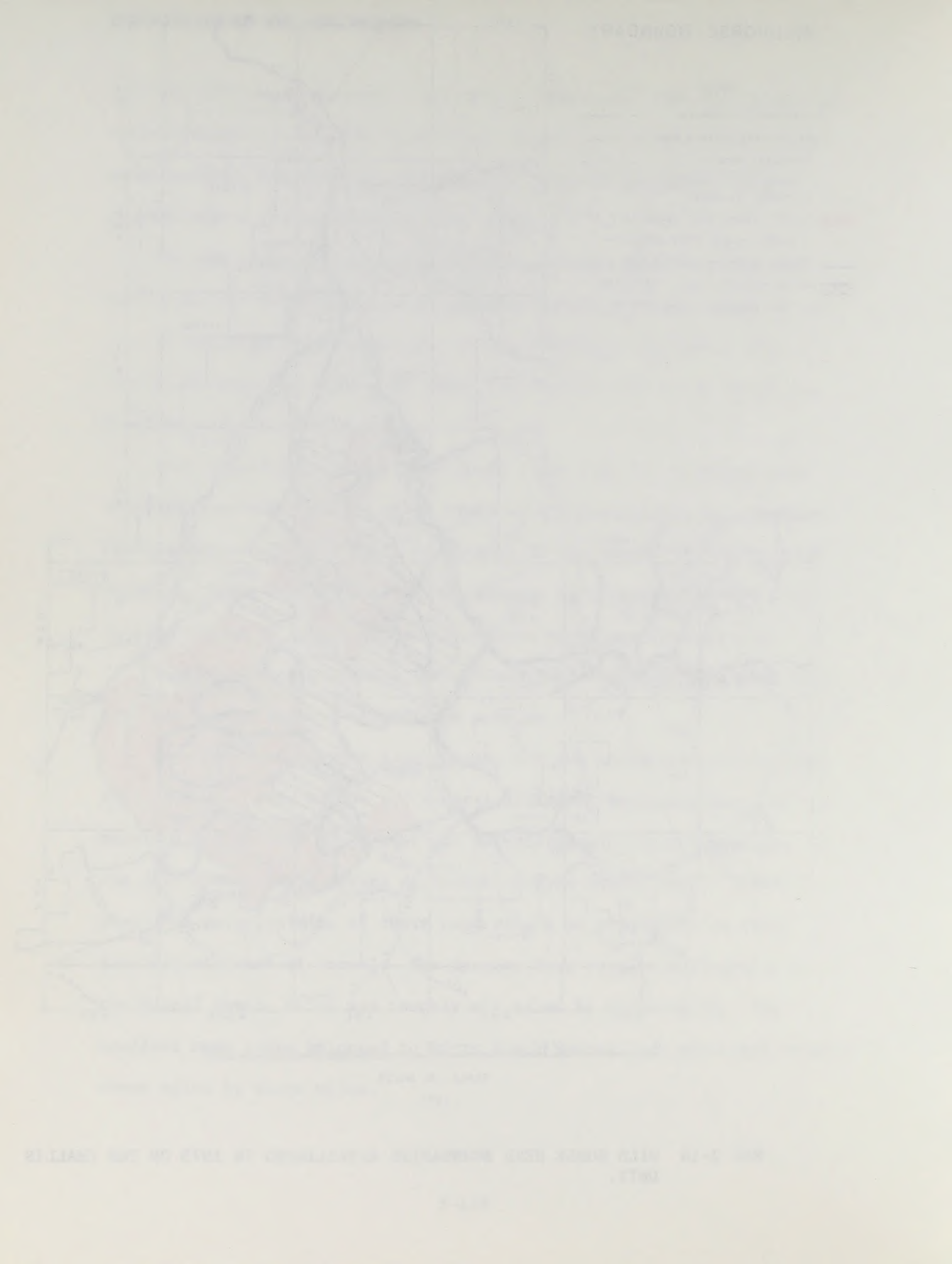
Most breeding occurs between April 1 and June 15, although some breeding does occur during other times of the year. This is evidenced by observation of a few colts being born in the months of July through December, while most foaling occurs between April 1 and June 15. Most foaling occurs in a warm exposure in areas which are free of wind.

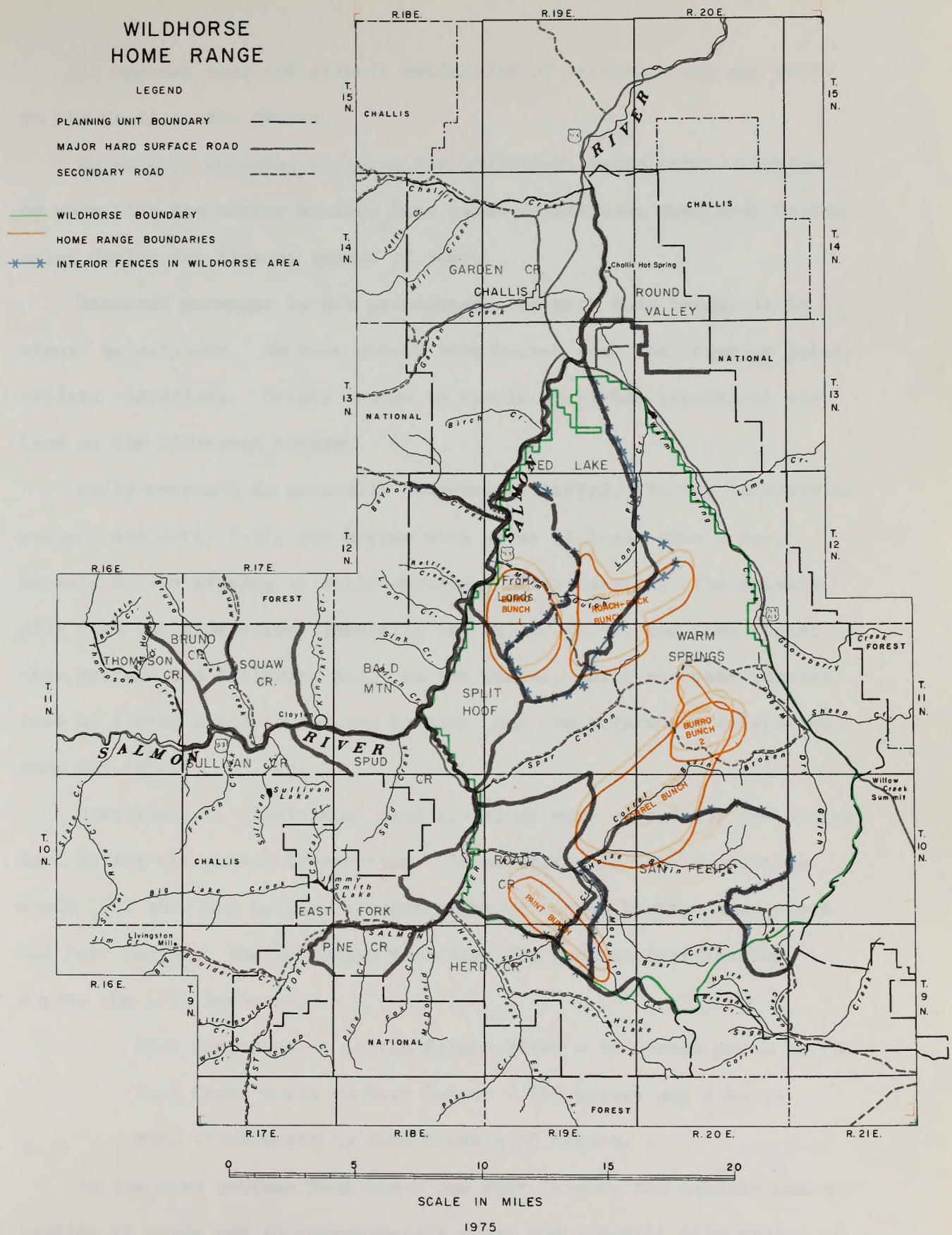
Judging from the overall size, vigor, and conformation, inbreeding does not appear to be a significant problem.

Each band establishes home ranges, and the boundaries are fairly well defined. Home ranges for several different bands overlap. A general idea of home range size can be determined from observations of the five marker bands during different seasons of the year. MAP 2-17 shows the relative size of their home ranges as determined by their greatest distance of travel. The largest home range was exhibited by the Sorrel Bunch, which was roughly six miles by three miles. The smallest home range belonged to Burro Bunch Number Two, which was roughly three miles by three miles.



MAP 2-16 WILD HORSE HERD BOUNDARIES ESTABLISHED IN 1973 ON THE CHALLIS UNIT.





MAP 2-17 HOME RANGES OF CHALLIS UNIT WILD HORSE BANDS.

It appears that the classic definition of territory may not apply to the Challis wild horses.

Movement. Movement patterns for individual bands were determined by observing the marker bands. Most bands do not move over four square miles during any time or season of year.

Seasonal movement is not pronounced, and with some bands, it is almost nonexistent. As snow comes, some horses seek the lower or intermediate elevations. Others choose to remain at higher elevations and feed on the windswept ridges.

Daily movement is generally feed-water related. During late spring, summer, and early fall, the horses will water at least once a day, usually in the evening or early morning. After watering, the animals will feed out from water, generally one or two miles, and then repeat this pattern the following day. In the winter, daily movement becomes less as living space is reduced by snow, and the horses can subsist on snow for water.

Distribution. Individual band locations were mapped for the entire herd during the annual inventories. In general, all the inventories since 1971 show the largest concentration of horses between Road Creek and Spar Canyon. The following indicates the general distribution during the 1975 inventory:

Spar Canyon north to the Salmon River - 99 horses and 2 burros.

Road Creek north to Spar Canyon - 260 horses and 1 burro.

Herd Creek north to Road Creek - 51 horses.

In the area between Road Creek and Spar Canyon, the largest concentration of bands was in approximately a one and one-half mile radius of

Spar Mountain, and in the area from Road Creek north to the ridgeline separating Corral and Horse Basin.

The horses seem to prefer higher, steeper country than cattle. The following reasons seem likely: (1) forage is generally better because of lack of competition from other grazing animals; (2) escape from flies and other pests; (3) better vantage points; and (4) it is generally cooler in summer.

Habitat Requirements. APPENDIX 2-B lists the results of a fecal analysis of the Challis horses, conducted in conjunction with Colorado State University. Forage preference by season is listed in relative percent density. Although limited, in that only a one-year sample was collected, it can serve as a general guide in determining the diets of Challis horses. Some variability exists in horse diets during different seasons of the year.

Challis wild horse diets consist mainly of grasses. In summer, grasses made up approximately 91% of the diet. During the fall, grasses were 83% of the diet, dropping to a low of 60% in the winter, and increasing to 73% in the spring.

During the winter, early spring, and late fall (the nongrowing season), the horses begin using less grass and more browse-type plants. During this period, these plants are relatively high in Vitamin A, protein, and phosphorus, whereas grasses are likely to be higher only in energy (Cook, et.al., 1952).

Habitat overlap and competition does exist between horses and other kinds of animals (see later discussion of habitat overlap and competition), and although the availability of preferred species may decrease

in these areas, horses may not be affected as much as other animals involved because of their mobility.

TABLE 2-21 lists major plants, in order of preference, used by horses during different seasons of the year. Most of the plants involved make up a substantial portion of the composition of forage available to horses. However, it is difficult to judge how the order of preference would be affected if different species were available in greater quantities.

Forage availability is most limited during the winter months. During heavy snowfall, the horses are forced from the higher country and subsist primarily on windblown ridges or on intermediate and lower elevations. Forage variety is usually much more limited in these areas than in the higher country.

Water is generally not a problem for the Challis wild horses. Normally, an adult horse will use ten to twelve gallons of water per day.

Vegetation throughout the horse area is predominantly sagebrush-grass. Therefore, most horses live in this type of cover year-round. In the hot summer months, horses spend some time in the willows and other riparian vegetation, but they more often seek out the higher elevations and ridge-tops. On windy days, horses have been observed to lie down in some of the larger patches of sagebrush for protection. Judging from the dung piles, horses will spend a substantial amount of time among trees if they are available.

During the winter months, some horses choose to remain at higher and intermediate elevations and subsist primarily on the windswept ridges.

TABLE 2-21

MAJOR PLANTS (IN ORDER OF PREFERENCE) USED BY CHALLIS UNIT WILD HORSES DURING EACH SEASON OF THE YEAR

		Percent of Use by Season							
		Spring	%	Summer	%	Fall	%	Winter	%
Grasses	1.	Bluebunch Wheatgrass	52.87	Bluebunch Wheatgrass	39.63	Bluebunch Wheatgrass	77.90	Bluebunch Wheatgrass	43.20
	2.	Idaho Fescue	5.22	Idaho Fescue	18.72	Sedge	2.45	Junegrass	5.86
	3.	Bluegrass	5.10	Junegrass	10.09	Junegrass	0.49	Bluegrass	3.70
	4.	Junegrass	3.18	Bluegrass	5.29	Bluegrass	0.87	Squirreltail	1.63
	5.	Indian Ricegrass	2.20	Indian Ricegrass	2.77	Reedgrass	0.36	Indian Ricegrass	1.16
Forbs	1.	Phlox	22.95	Phlox	2.45	Phlox	8.01	Phlox	19.58
	2.	Lupine	0.31	Eriogonum	2.45	Lupine	1.84	Eriogonum	4.20
	3.			Astragalus	0.30	Eriogonum	.07	Lupine	0.93
Browse	1.	Winterfat	3.85	Winterfat	3.09	Prickly Phlox	4.55	Sagebrush	10.08
	2.	Sagebrush	0.20	Sagebrush	.50	Winterfat	1.46	Winterfat	3.70

These ridges are usually barren of any sizeable cover and are extremely cold due to the wind. It appears that large canopy cover is not necessary for winter subsistence.

Interspecific Competition. A diet similarity index (based on fecal analysis), between cattle and horses in the Challis wild horse area was calculated by Dr. Richard Hansen of Colorado State University. Diet similarities are expressed as a percentage. For example, 68% (below) indicates that during the spring, horse and cattle diets overlap 68% of the time.

Cattle (grazing season-long)	Horse	Spring	68.0%
Cattle " " "	Horse	Summer	65.3%
Cattle " " "	Horse	Fall	61.4%
Cattle " " "	Horse	Winter	49.4%

Both cattle and horses primarily subsist on grasses, and, therefore, the degree of dietary overlap is substantial.

Actual competition for preferred plants is lessened by the fact that horses prefer higher and steeper country and generally feed farther from water. Competition is keenest around water, in wet meadow areas, and other habitat overlap areas where animals tend to concentrate. As a result, these areas show heavy use.

Judging from the results of the fecal analysis of the Challis wild horses and wildlife using the area (see APPENDIX 2-B), the greatest potential conflict would be between elk and wild horses. Elk generally use the horse area in winter and early spring, and their diets consist largely of grasses and shrubs during this time of year (Kufeld, 1973).

Actual competition between elk and wild horses is lessened because habitat overlap between the two species is small. Elk largely use the Willow Creek Summit, the heads of Corral and Horse Basins, and the Herd Lake area. Only 10 to 25 horses use these same areas.

Competition between wild horses and antelope does not appear to be significant. Antelope diets consist primarily of browse and forbs. Potential conflict exists, primarily during the nongrazing season, when horses slaken their use of grasses and take other forb and browse plants. Also, antelope and horse habitats do overlap to a large extent.

Deer and wild horses have potential competition conflict in the spring when deer begin to take the new green grasses. Diet overlap does not appear significant other seasons of the year. Horses use some sagebrush in winter. This may also have potential for conflict if the numbers of horses or deer increase (Kufeld, et.al., 1973).

An area of concern involving wildlife and wild horses are the stream bottoms and wet meadows. These areas are especially important to many species of wildlife and increased horse or cattle use could have serious impacts on these critical habitats.

A range survey recheck of the wild horse area was made in 1974-1975 to determine its carrying capacity for wild horses.

TABLE 2-22 contains the 1974-75 inventory data. The average number of horses using an allotment was determined by averaging the percentage of horses found in the various allotments in the 1973, 1974, and 1975 inventories, then multiplying that percentage times the number of horses and burros now using the area. The figures are for NRL, private, and state lands. A negative figure in the difference column indicates the allotment is overstocked.

TABLE 2-22

CHALLIS UNIT WILD HORSE RANGE INVENTORY - 1974-1975

Allotment	Number of Horses 1/	Available AUMs	Present AUM Use	Difference
Warm Springs	164	3,627	2,460	+ 1,167
San Felipe	94	2,011	1,415	+ 596
Wooley	16	194	246	- 52
Maraffio	21	208	308	- 100
Bradshaw Basin	41	547	615	- 68
Malm Gulch	16	905	246	+ 659
Bradbury Flat	29	642	431	+ 211
Road Creek	29	1,199	431	+ 768
Total	410 1/	9,333	6,152	+ 3,181

1/ Includes three burros.

Based on this recheck of the existing range survey in the wild horse area, the area can probably support some 582 horses. However, this survey is based on summer conditions, and all of the country being available to horses.

The limiting factor on horse numbers is winter range. Much of the horse range becomes unavailable during winter because of deep snow. The late winter and early spring of 1975 gave a good indication of the country that was unavailable to horses because of the heavy snowfall during that period. This unavailable country is mapped (MAP 2-16) and it was concluded that only approximately 54% of the wild horse area was potentially available to horses in the winter.

Considering that only approximately one-half of the wild horse range is available to the horses in the winter and not all that country is actually being used, it is logical to assume that the horse area will support approximately one-half the number that could be supported during the summer, or approximately 300 horses.

Much of the horse area is in poor to fair condition for livestock grazing. Horse grazing is contributing substantially to the present condition of the range because they are grazing the area yearlong. This allows them to graze forage plants at critical stages necessary for plant growth and survival (see Vegetation Section). Horses also are on the various soils when they are wet, which probably adds to the soil compaction because of their large hooves and trailing nature.

Overuse of some areas, especially wintering areas for horses, is an item of concern. The country available to horses becomes limited and horses are forced to concentrate in certain areas, imposing heavy grazing pressure on these locations. Many of these same sites are used by wintering wildlife such as antelope and deer, and they are some of the first areas that cattle are allowed to use in the spring.

Areas near water and wet meadow areas are heavily utilized by cattle and horses, especially in the spring and fall when other forage is dry and shows signs of overuse. Because of the concentration effect, these areas are appropriately called critical habitat overlap areas.

For identification of areas that are used heavily by horses in the winter and critical habitat overlap areas, refer to MAP 2-16. Many of these areas are related to the poor condition areas identified in the Range Condition Rating.

Endangered, Threatened, and Status Undetermined Species

The only endangered species known to occur in the unit is the peregrine falcon. One active nest is believed to occur in the Challis Unit, and other suitable, possibly historic nesting sites, have been inventoried (Platt, 1975). Preferred nesting sites are high, sheer cliffs adjacent to riparian habitats.

With the passage of the Endangered Species Act of 1973, species previously classified as rare will be reevaluated to determine their threatened status. Species in this category include the grizzly bear, Rocky Mountain wolf, spotted bat, and prairie falcon.

Neither the grizzly bear nor the wolf is believed to occur in the unit because there are no confirmed sightings within the past ten years. Both species historically occurred in the unit.

The presence of spotted bats has not been confirmed in the unit. They are almost completely nocturnal, preferring arid areas and roosting in old buildings or caves.

A minimum of three nesting pairs of prairie falcons are believed to occur in the unit. A recent inventory identified additional suitable nesting sites. These birds are primarily cliff nesters and sometimes travel up to fourteen miles from their nests in search of food.

Other species have been classified as "status undetermined" because they have been suggested as threatened species by competent institutions or individuals, but for which insufficient information is available to determine their true status. Those species which may occur in the unit and would fall in this category include wolverine, pine marten, Canada lynx, ferruginous hawk, pigeon hawk, osprey, long-billed curlew, mountain plover, and semipalmated plover. Very little information is available on occurrence, nesting, abundance, or other use of the unit by these species.

Aquatic Life

The Salmon River was appropriately named for the species that gave it national prominence. Historically, adult chinook salmon (Oncorhynchus tshawtyscha) and steelhead trout (Salmo gairdneri) abounded in the river during seasons of spawning runs. More spring and summer chinook were formerly produced in the Salmon River than any other tributary of the Columbia River system (FIGURES 2-33 and 2-34). These species have always been an important source of food and recreation to thousands of people inhabiting the Pacific Northwest and localities along the major rivers.

FIGURE 2-33 DEADMAN HOLE ON THE SALMON RIVER. Anadromous fish concentrate in deep holes to rest during their upstream migration which makes them favorite salmon fishing areas.

Anadromous fish perform phenomenal biological feats during their life cycle. Spawned in mountain streams. the young fish hatch and migrate to the Pacific Ocean where they forage hundreds of miles into the north Pacific and eventually mature to return as robust adults to

their natal streams. Salmon entering the East Fork to spawn have migrated about 848 miles from the Pacific Ocean.

FIGURE 2-34 SECTION OF THE SALMON RIVER AT ITS CONFLUENCE WITH THE EAST FORK. This reach of the river is used by summer chinook for spawning, by young salmon and steelhead for rearing, and by most other resident species. Photo shows typical riparian vegetation found along the main river.

Because anadromous fish are migratory, they are vulnerable to harmful habitat changes in downstream areas as well as those in their "home" streams. There have been drastic declines in the abundance of salmon and steelhead through the years, including those populations found in streams within the Challis Unit. Some of the best remaining anadromous fish habitat in the upper Salmon River watershed is located in the unit.

A remnant run of sockeye salmon (Oncorhynchus nerka) migrates through the Challis area in late July and August enroute to Redfish Lake. A few Pacific lamprey (Eatosphenus tridentatus) still spawn in larger streams in the unit.

Resident cold-water game species, including rainbow trout (Salmo gairdneri), cutthroat trout (Salmo clarki), Dolly Varden (Salvelinus malma), brook trout (Salvelinus fontinalus), and whitefish (Prosopium williamsoni) comprise an important part of the fish fauna of the unit. They provide much recreation for anglers and other persons who enjoy observing resident as well as anadromous fish in streams. All cold-water species have become adapted to rather specific habitat requirements since the Pleistocene period (Gebhards, 1970).

Nongame species in the unit include suckers (Catostomus sp.), squawfish (Ptychocheilus oregonenis), dace (Rhinichthys sp.), sculpins (Cottus sp.), and the redside shiner (Richardonsonius balteatus).

There are approximately 158 miles of fish-producing streams within the unit. Most perennial streams, except Road Creek and its tributaries and Lake Creek, originate at higher elevations in the Challis National Forest. The general distribution of anadromous and resident fish is illustrated in MAP 2-5 in the Soils and Water Resource Section. The miles of stream habitat type and adjacent land ownership in the unit are summarized in TABLE 2-23. Over 55% (88 miles) of the total amount of stream habitat, including about 40% (33 miles) of the anadromous fish habitat, is located adjacent to national resource lands (NRL).

Herd and Jimmy Smith Lakes are the two largest lakes within the unit. Trout inhabit both lakes. Herd lake is on NRL as is a small part of Jimmy Smith Lake.

Estimated angler catches of chinook salmon, steelhead trout, and other trout are compiled in TABLES 2-31, 2-32, and 2-33, respectively, in the Recreation Resources Section.

TABLE 2-23

ESTIMATED MILES OF STREAM HABITAT BY TYPE AND OWNERSHIP OF ADJACENT LANDS WITHIN CHALLIS UNIT

Habitat Type	Miles of Ownership		Miles of Habitat
Spawning and Rearing	NRL	Other	
Anadromous and Resident Fish	33.0	50.7	83.7
Resident Fish Only	55.6	18.9	74.5
	88.6	69.6	158.2
Salmon Spawning			
Spring Chinook	5.0	7.0	12.0
Summer Chinook	21.0	31.5	52.5
	26.0	38.5	64.5

The known occurrence of game species is listed by stream in TABLE 2-24. Also included are stream classifications by the Idaho Department of Fish and Game and miles of NRL adjacent to each stream. Game species are defined by Idaho State Law (Reg. 13, under authority of Section 36-301A).

The most important anadromous fish habitat in the Challis Unit is the main Salmon River and East Fork including Herd Creek. The East Fork is one of the most important streams for salmon production in the entire upper Salmon River watershed (FIGURES 2-35 and 2-36). Although adult anadromous fish may not spawn in some of the smaller tributary streams of the Salmon River and East Fork, the young fish enter them during summer months and migrate upstream to take advantage of preferred cooler water, e.g., chinook fingerlings in Challis Creek and Little Boulder Creek.

Summer chinook utilize over 52 miles of the main Salmon River and the East Fork for spawning and rearing. During a six-year period from 1969-74, annual counts made by personnel of the Idaho Department of Fish and Game averaged 28 redds between Challis Bridge and the East Fork (FIGURE 2-34), 69 redds between the East Fork and Warm Springs Creek Bridge (about half of this area is in the Challis Unit), and 126 redds

TABLE 2-24

SUMMARY OF MAJOR STREAMS, GAME SPECIES PRESENT, STATE CLASSIFICATIONS, AND MILES ADJACENT NRL FOR THE CHALLIS PLANNING UNIT

Name of Stream or Creek	Game Species Present	Idaho Stream Classification	Miles of Adjacent NRL
Salmon River	Ch, Ss, Stld, Rb, Ct, Dv, Wf	I	17.5
East Fork	Ch, Stld, Rb, Ct, Dv, Wf	I	5.0
Road	Ct, Rb	I & III	8.0
Horse Basin	Trout	-	4.0
Mosquito	Trout	-	1.7
Bear	Rb, Ct	-	1.1
Herd	Ch, Stld, Rb, Dv, Ct, Wf	I	3.5
Lake	Stld, Rb	I & III	3.8
Big Lake	Ch, Stld, Rb, Ct, Dv, Wf	I & III	1.5
Corral	Trout	III	.5
Big Boulder	Ch, Stld, Rb, Ct, Dv, Wf	I	.8
Little Boulder	Ch, Stld, Rb, Ct, Dv, Wf	I	1.3
McDonald	Trout	III	2.8
Pine	Trout	III	1.8
Wickiup	Trout	III	.4
Spar Canyon	None (Dry)	IV	-
Challis	Ch, Stld, Rb, Ct, Wf, Dv	I & III	.5
Mill	Ct	III	3.6
Squaw	Ch, Stld, Rb, Ct, Dv, Wf	I	1.5
Bruno	Ct	-	3.0
Garden	Ct	III	.5
Bayhorse	Rb, Ct, Bt	III	2.3
Kinnikinic	Ct	III & IV	3.5
Thompson	Stld, Rb, Ct, Dv, Wf, Bt	III & IV	7.5
Pat Hughes	Ct	-	2.2
Warm Springs	Trout	IV	1.5
Malm Gulch	None (Dry)	IV	-
Birch	Trout	-	2.0
Lyon	Rb	-	1.2
Fox	Trout	-	1.5
French	Trout	-	1.4
Sullivan	Trout	-	1.5
Spud	Trout	-	1.2
		Total Miles	88.6

1/ BLM 1971; Bjornn and Falter, 1973; Corley, 1971; Mallet, 1974; Rabe et.al., 1975; and VTN Colorado, Inc.,1975.

2/ Species Abbreviations: Chinook salmon - Ch, Sockeye salmon - Ss, Steelhead trout - Stld, Rainbow trout - Rb, Cutthroat trout - Ct, Brook trout - Bt, Dolly Varden - Dv, Mountain whitefish - Wf, Trout - refers to fish that were observed or reported in streams but not positively identified in hand.

3/ Refer to TABLE 2-29 for definition of stream classes.

4/ Miles of ownership on one or both sides of fish-producing streams.

in the lower East Fork. Summer chinook habitat within the unit is some of the most important remaining habitat in the upper watershed.

FIGURE 2-35 THE LOWER EAST FORK AT THE ZIEGLER HOLE. The lower reaches provide important habitat for resident game fish and anadromous fish - rearing area for young and migration route for adults to prime upstream spawning areas.

FIGURE 2-36 A SPRING CHINOOK SALMON SPAWNING RIFFLE ON THE EAST FORK SOME 865 MILES FROM THE PACIFIC OCEAN.

Abundance of summer chinook in the upper Salmon River decreased in the 1960s. One reason for this decrease was deterioration of spawning and rearing areas in the Salmon River, including those in the Challis Unit. Large withdrawals of water for irrigation caused a corresponding decrease in rearing area for production of young summer chinook. Observations made in 1968 and 1969 indicate that young chinook salmon do not live in the main Salmon River below Challis where summer water temperatures exceed 70°F. During this study, very few juvenile chinook were found below Challis where domestic and agricultural pollution and high water temperatures have made the river unsuitable as summer rearing area (Reingold, 1970). At one time, many young salmon were undoubtedly produced in the main river below Challis. Habitat conditions in the main Salmon River above Challis in the unit thus assume much greater importance when considering ways to improve the summer chinook run.

Spring chinook spawn within the unit in twelve miles of the upper East Fork and Herd Creek (FIGURES 2-37 and 2-38). During 1969-74, an average of 435 redds were counted in an index area of the upper East Fork and an average of 32 redds were counted in the lower three miles of Herd Creek. Some fish hatched in the upper East Fork and Herd Creek migrate downstream and rear in the lower East Fork and the Salmon River during summer and fall months before migrating to the Pacific Ocean the following spring.

Spring chinook would probably spawn in some of the larger tributaries within the unit if the streams were not almost completely dewatered during summer months for irrigation, e.g., Challis and Squaw Creeks. At present, some juvenile chinook hatched in the East Fork enter tributary

streams during summer months because of preferred cooler water temperatures, e.g., Big and Little Boulder Creeks.

FIGURE 2-37 UPPER HERD CREEK ABOVE LAKE CREEK. This area was grazed during 1975, and shows typical condition of streamside grasses and sedges after livestock use. Anadromous fish use Herd Creek for several miles above this point.

FIGURE 2-38 LOWER HERD CREEK AND TRAIL GULCH IN THE BACKGROUND. Herd Creek is a very important salmon, steelhead and resident trout-production stream. This area was not grazed during 1975, as can be seen from the tall growth of grasses and sedges on the left streambank.

Steelhead use the Salmon River for migration, rearing, and spawning. The East Fork and Herd Creek are important steelhead-producing streams, with lesser populations in the lower parts of Big Boulder, Little Boulder, Big Lake, and Lake (tributary to Herd Creek) Creeks. Tributaries to the Salmon River that produce steelhead are Challis, Squaw, and Thompson Creeks.

Population estimates, redd counts, or other indices of abundance are not available for steelhead in streams within the unit. There is less information about steelhead populations in the unit than for chinook salmon. At one time, steelhead spawned in lower Road Creek (Fulton, 1970), but the run was gradually eliminated by habitat changes.

Although resident game species do not receive the regional and national notoriety that anadromous species do, they support the majority of the fishing effort and produce the bulk of the catch within the Challis Unit. Resident species are not subjected to offsite habitat problems similar to those experienced by anadromous fish. Fisheries for resident species are therefore not as difficult to manage as those for salmon and steelhead. However, the same habitat problems affecting production of juvenile anadromous fish in streams within the unit also influence populations of resident fish.

The most important streams for production of resident game species within the unit are the Salmon River, the East Fork, Herd Creek, Challis Creek, Squaw Creek, Thompson Creek, Road Creek, Lake Creek, Bayhorse Creek, and Garden Creek. Other streams with smaller populations of trout, Dolly Varden and whitefish are listed in TABLE 2-24.

Rainbow trout, due in part to annual releases of hatchery fish in the main Salmon River, are the most numerous species caught by anglers.

Native cutthroat trout are fairly widespread throughout streams of the unit. Cutthroat inhabit the more remote, headwater areas of some streams where rainbow are absent. They prefer the colder waters of high mountain streams.

Dolly Varden is a char native to the main Salmon River and its larger tributaries, as are whitefish. Brook trout were introduced to some streams near Challis years ago. They are characteristically found in high-elevation streams and lakes with cold water. Brook trout inhabit Bayhorse and Thompson Creeks and may occur in several other streams within the unit.

Native rainbow trout are caught in Herd Lake, which is about 23 acres in size. Jimmy Smith Lake (45 acres) provides a good winter fishery for cutthroat trout.

Some species not listed for a particular stream may be present as a result of past stocking by the Idaho Department of Fish & Game. Brook trout were planted during one or more years in the East Fork, Challis Creek, Garden Creek, and Squaw Creek and may occur in these streams either within the unit or in headwater areas outside the unit.

The natural life cycles for salmon and steelhead in Idaho streams are basically the same. All Pacific salmon die after spawning, whereas trout do not. Some parts of the life cycle vary with species, i.e., time young spend in fresh water before migrating to the ocean, age at maturity, and type of habitat. The cycle is the same for resident trout, except they do not migrate to the ocean. Salmon and trout require

gravel (size depends upon species) to construct nests or "redds" for depositing their eggs. Pertinent life history information for salmonid species is summarized in APPENDIX 2-D).

Many of the habitat requirements of the juvenile salmon and steelhead and trout are quite similar. Requirements to maintain satisfactory populations of cold water game fish include good water quality, adequate food, sufficient cover, and the right conditions for reproduction and fish passage (Idaho Water Resource Board, 1969).

The necessary water quality requirements for fish listed in the Water Resource Section include dissolved oxygen concentrations of 8 to 10 milligrams per liter (mg/l) during spawning and egg incubation, and not less than 6 mg/l at other times; water temperatures between 42-55^{o}F for spawning, and not over 65^{o}F for summer rearing; carbon dioxide less than 5 mg/l; pH between 6.7 and 8.6; and clear waters with less than 5 Jackson Turbidity Units except during periods of higher natural turbidities.

Aquatic insects are the primary food of cold water game species. Terrestrial insects sometimes make up a substantial part of the diet, especially in smaller streams where overhanging vegetation is abundant. Crustaceans and small fish are important in the diet of larger game fish. Aquatic insects in turn feed on smaller life forms and vegetation. Most of the basic productivity of streams comes from riffle-rubble areas. Recent benthos studies in unit streams by Rabe, et.al. (1975), Corley (1971), Bjornn and Flater (1974), and VTN Colorado, Inc. (1975) show that mayflies, caddisflies, stoneflies, two-winged flies (diptera),

and beetle larvae were the predominant orders found. These groups are considered prime food for trout and young salmon.

Cover is one of the essential components of good fish habitat. It is used to escape predators and as resting areas where fish are not subject to stress. The deeper pools supply much of the escape cover. Important cover is also provided by overhanging bank vegetation, undercut banks, floating debris, submerged objects (logs, stumps, rocks, or roots), submerged vegetation, and even water turbulence (Giger, 1973) (FIGURE 2-39).

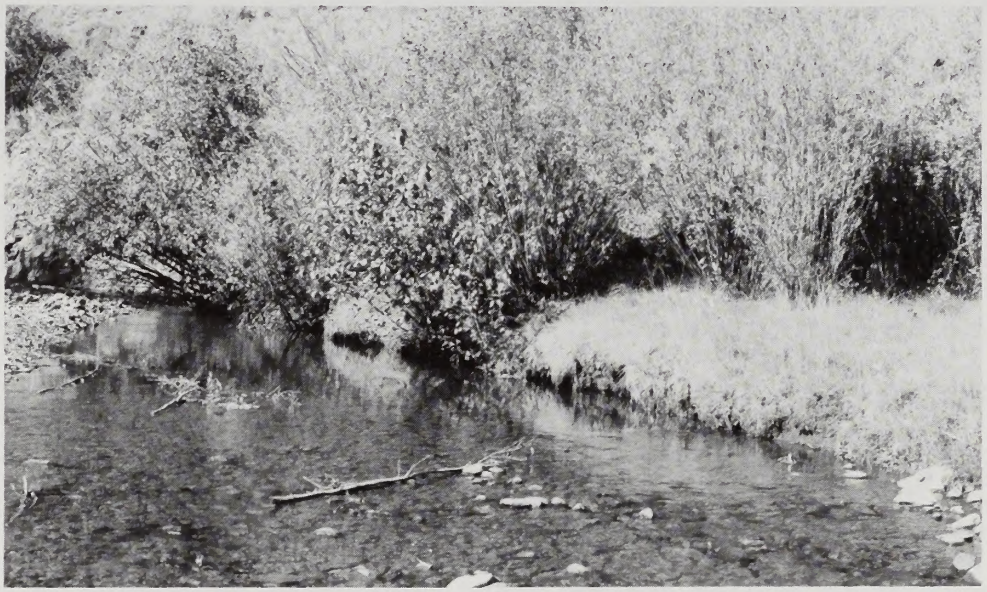


FIGURE 2-39 SEVERAL TYPES OF STREAM COVER NECESSARY FOR GOOD PRODUCTION OF TROUT AND YOUNG ANADROMOUS FISH ON THOMPSON CREEK. Alder and willow give high cover over the pool and the undercut bank provides protection and additional living space for fish.

Salmonid fry, recently emerged from spawning riffles, hide under stones and in crevices in gravel and riffle areas for escape cover, often in very shallow water areas (Giger, 1973 and Phillips, 1971). Studies in the Lemhi River, located 58 miles north of the unit, revealed

both young chinook and trout less than a year old migrate downstream to areas of large rubble substrate which they use for fall and winter cover (Bjornn, 1971). Trout and salmon enter the substrate in larger streams during fall months when water temperatures decrease to 4-6°C (39-43°F). At this time of the year, young fish will apparently leave an area if a suitable substrate with adequate interstices for cover is not present.

All cold water game fish require gravels of varying size to deposit their eggs in or upon, depending on the species and size of fish spawning. Gravel beds must be relatively free of sediment, or mortalities to eggs and developing embryos will be high. Dissolved oxygen concentrations must also be high to insure good hatching success. Different species also require certain water velocities and depths for spawning. For example, the minimum water depth for spawning steelhead, large trout, and char is 0.6 foot.

Salmon and steelhead migrate to and from the Pacific Ocean and must have access to their spawning areas to complete their life cycles. Some resident game and nongame species also make spawning runs into tributaries or headwater areas. They also make fall and spring migrations from headwaters to lower parts of rivers and back again.

Population of salmon and steelhead in the Salmon River and streams within the unit are now at critical low levels. Annual fish counts at Ice Harbor Dam and catch estimates for the State of Idaho illustrate the low population numbers (APPENDICES 2-E and 2-F). The precarious condition of these wild populations is further emphasized by the large increases of hatchery-produced fish in the runs (Reingold, 1973b and Pacific Northwest River Basin Commission, 1974).

Runs were so small in 1975 that the Idaho Department of Fish and Game closed the salmon season and required release of all steelhead caught to allow all fish in the runs to spawn. Season bag limits had previously been reduced from ten to five salmon per year and from twenty to ten steelhead per year to insure adequate spawning populations (Ortmann, 1975a).

Reasons for the drastic declines in runs of anadromous fish in the Salmon River are discussed in the following Future Environment Section of this chapter.

Data are not available to determine the total value of the fishery resource of the Challis Unit. Based on the analysis in APPENDIX 2-G, the estimated annual net value for chinook salmon produced in the Challis Unit during the late 1960s was $271,000. Similar estimates for steelhead and resident game fishes could not be made.

Habitat Conditions

The productivity of streams as salmon and trout habitat within the Challis Unit has been diminished by several activities of man. The largest impacts on fish habitat have been caused by irrigation diversions of water, stream channel alterations, and overgrazing by livestock (State of Idaho, 1976).

A partial stream inventory on some of the more important streams in the unit was conducted during August, 1975 by Rabe, et.al., University of Idaho. Information on fish species collected during the survey is included in TABLE 2-24. Results of benthic sampling during the survey

and conclusions about water quality are discussed in the Water Resources Section.

Rabe, et.al., concluded that, overall, the streams inventoried contained some good salmonid (trout, salmon, and steelhead) habitat of high water quality conducive to fish production. Roadbuilding, grazing, and stream diversions were the three main factors identified as degrading the stream environment.

Habitat conditions were evaluated by the fishery biologist assigned to the EIS team on sections of 36 streams (34 perennial and 2 intermittent) during preparation of this section. These conditions pertain to NRL, except for possibly Corral and Jimmy Smith Creeks (tributaries to Jimmy Smith Lake) and the left fork of Centennial Creek.

Habitat conditions were evaluated at 59 different locations using a rating system developed for the following factors or physical habitat components: high stream cover (trees and brush; FIGURE 2-40), low streambank vegetation (mostly grasses and sedges; FIGURE 2-41), condition of streambanks (erosion; FIGURE 2-42), channel stability, and sedimentation of the streambed. Over 8% (7.3 miles) of the stream habitat adjacent to NRL was evaluated using this method (see APPENDIX 2-H for evaluation criteria).

Dewatering of streams for irrigation purposes, although a very important factor adversely affecting stream productivity, was not included in this evaluation of habitat conditions.

High stream cover was generally considered adequate - 85% of the stream sections evaluated had either good or fair high stream cover (see

FIGURES 2-39 and 2-40). This factor was therefore not used in determining the final habitat condition rating for each stream.

FIGURE 2-40 BIRCH CREEK ILLUSTRATING HIGH STREAM COVER TYPICAL OF MANY SMALL STREAMS WITHIN THE CHALLIS UNIT. Willow, alder, aspen, and birch are the predominant trees which grow along the tributary streams.

FIGURE 2-41 UNGRAZED SECTION OF ROAD CREEK BELOW HORSE BASIN CREEK. Illustrates good streambank growth of grasses and sedges which will resist erosion and provide cover for trout.

FIGURE 2-42 A HEAVILY GRAZED SECTION OF ROAD CREEK ABOVE HORSE BASIN CREEK. Streambanks are trampled, causing accelerated erosion. There is reduced bank cover for trout, and the streambed is filled with sediments, reducing productivity.

Numerical ratings of 1 (good), 2 (fair), and 3 (poor) were assigned to each of the four remaining factors and tabulated for each stream section. The habitat condition was classified as poor if two or more of the four factors rated 3. Good and fair condition ratings were given to streams that had more than two similar ratings, respectively. If a stream section had two 1 and two 2 ratings, its condition was rated as fair.

The present capability of streams to produce fish, disregarding effects of irrigation withdrawals, is estimated as follows for each habitat condition classification.

Good - Streams with 75% or more of their original productivity.

Fair - Streams with between 50 and 74% of their original productivity.

Poor - Streams with less than 50% of their original productivity.

Of the 36 streams rated in the unit, habitat conditions were good in four streams (11%), fair in fifteen streams (42%), and poor in seventeen streams (47%).

Habitat conditions of only the fish-producing streams in the Challis Unit are summarized in TABLE 2-25. The total number of miles and percent for each condition are also shown by habitat type. Habitat conditions of larger streams are generally better than those of small tributaries. Streams are in fair or poor condition due primarily to lack of low streambank vegetation (grasses and sedges), eroding streambanks, and sedimentation of streambeds.

Streams and their habitat conditions are listed by proposed allotment in TABLE 2-26. In some instances streams are designated as allotment boundaries, but livestock do not use areas adjacent to streams because of private ownership, topography, or roads.

TABLE 2-25

EXISTING FISH HABITAT CONDITIONS OF 27 FISH-PRODUCING STREAMS ON NRL WITHIN THE CHALLIS PLANNING UNIT

Habitat Type	Estimated Miles by Habitat Condition (Percent in Parenthesis) Good	Fair	Poor	Total Miles
Anadromous & Resident Fish				
Stream or Creek				
Salmon River	14.0	3.5		17.5
East Fork	1.0	4.0		5.0
Herd		3.5		3.5
Lake			1.0	1.0
Big Lake			1.2	1.2
Big Boulder		.8		.8
Little Boulder		1.3		1.3
Squaw			.2	.2
Thompson			2.0	2.0
Challis	.5			.5
Totals	15.5	13.1	4.4	33.0
	(47)	(40)	(13)	
Resident Fish Only				
Stream or Creek				
Lake		2.8		2.8
Road		.8	7.2	8.0
Big Lake			.3	.3
Corral		.5		.5
Squaw			1.3	1.3
Horse Basin			4.0	4.0
Mosquito			1.7	1.7
Bear			1.1	1.1
Spud			1.2	1.2
Warm Springs		1.5		1.5
Thompson		5.5		5.5
Pine		1.8		1.8
Garden	.5			.5
Mill		3.6		3.6
Birch			2.0	2.0
Bayhorse		.3	2.0	2.3
Bruno		3.0		3.0
Sullivan	1.5			1.5
French			1.4	1.4
Lyon		1.2		1.2
Kinnikinic		3.5		3.5
Totals	2.0	24.5	22.2	48.7
	(4)	(50)	(46)	
Challis Unit Totals	17.5	37.6	26.6	81.7
	(21)	(46)	(33)	

TABLE 2-26

EXISTING CONDITION OF FISH HABITAT BY STREAM AND PROPOSED ALLOTMENT

Proposed Allotment [1]	Name of Stream or Creek	Fish Habitat Condition (Miles in Parenthesis) [2] Anadromous and Resident Fish		Resident Fish Only	
Herd Creek	East Fork	- [3]	(.5)		
	Herd	Fair	(3.5)		
	Lake	Poor	(1.0)	Fair	(2.8)
	McDonald			-	(2.8)
	Fox			-	(1.5)
	Totals		(5.0)		(7.1)
Road Creek	East Fork	Fair	(.6)		
	Road			Fair	(.8)
				Poor	(3.0)
	Totals		(.6)		(3.8)
East Fork	East Fork	Fair	(2.1)		
	Big Lake	Poor	(1.2)	Poor	(.3)
	Corral Creek			Fair	(.5)
	Jimmy Smith			Poor	(-) [4]
	Big Boulder	Fair	(.8)		
	Little Boulder	Fair	(1.3)		
	Wickiup			-	(.4)
	Sheep			Poor	(-)
	Totals		(5.4)		(1.2)
Split Hoof	Salmon River	Good	(1.5)		
	East Fork	Good	(1.0)		
	Total		(2.5)		
Squaw Creek	Salmon River	Good	(2.2)		
	Squaw	Poor	(.2)	Poor	(1.3)
	Totals		(2.4)		(1.3)
San Felipe/ Peck Canyon	Road			Poor	(4.2)
	Horse Basin			Poor	(4.0)
	Corral Basin			Poor	(-)
	Mosquito			Poor	(1.7)
	Bear			Poor	(1.1)
	Sage			Poor	(-)
	North Fork, Sage Creek			Poor	(-)
	Totals				(11.0)
Spud Creek	Salmon River	Good	(5.8)		
	East Fork	Good	(1.0)		
	Spud			Poor	(1.2)
	Totals		(6.8)		(1.2)
Warm Springs	Warm Springs			Fair	(1.5)
	Spar Canyon			Dry	
	Corral Basin			Poor	(-)
	Total				(1.5)
Thompson Creek	Salmon River	Good	(.8)		
	Thompson	Poor	(2.0)	Fair	(5.5)
	Pat Hughes			-	(2.2)
	Totals		(2.8)		(7.7)

1/ Listed in same order as in TABLE 1-2.

2/ Some stream miles are duplicated where they are common boundaries between two allotments, e.g., Salmon River - Bald Mountain and Spud Creek Allotments and East Fork - Spud Creek and Split Hoof Allotments.

3/ A dash indicates habitat conditions were not evaluated.

4/ A dash in parenthesis (-) indicates no fish were observed or reported in the stream.

TABLE 2-26 (cont.)

EXISTING CONDITION OF FISH HABITAT BY STREAM AND PROPOSED ALLOTMENT

Proposed Allotment 1/	Name of Stream or Creek	Fish Habitat Condition (Miles in Parenthesis) 2/ Anadromous and Resident Fish		Resident Fish Only	
Pine Creek	East Fork	Fair	(1.3)		
	Pine			Fair	(1.8)
	Totals		(1.3)		(1.8)
Garden Creek	Salmon River	Good	(3.0)		
	Challis	Good	(.5)		
	Garden Creek			Good	(0.5)
	Mill			Fair	(3.6)
	Birch			Poor	(2.0)
	Bayhorse			Fair	(0.3)
				Poor	(2.0)
	Totals		(3.5)		(8.4)
Bruno Creek	Squaw	Poor	(.2)	Poor	(1.3)
	Bruno			Fair	(3.0)
	Totals		(.2)		(4.3)
Sullivan Creek	Salmon River	Good	(2.5)		
	Sullivan			Good	(1.5)
	French			Poor	(1.4)
	Totals		(2.5)		(2.9)
Bald Mountain	Salmon River	Good	(8.0)		
	Bayhorse Creek			Fair	(0.3)
				Poor	(2.0)
	Centennial, Left Fork			Fair	(-)
	Rattlesnake			Dry	
	Lyon			Fair	(1.2)
	Sink			Poor	(-)
	Birch #2			Fair	(-)
	Kinnikinic			Fair	(3.5)
	Totals		(8.0)		(7.0)
Red Lake	Lone Pine (Intermittent)			Poor	(-)
	Total				(-)
Round Valley	Salmon River	Fair	(3.5)		
	Total		(3.5)		

1/ Listed in same order as in TABLE 1-2.

2/ Some stream miles are duplicated where they are common boundaries between two allotments, e.g., Salmon River - Bald Mountain and Spud Creek Allotments and East Fork - Spud Creek and Split Hoof Allotments.

3/ A dash indicates habitat conditions were not evaluated.

4/ A dash in parenthesis (-) indicates no fish were observed or reported in the stream.

Endangered, Threatened, and Status Undetermined Species

There are no fish in the Challis Planning Unit classified as endangered or threatened by the U.S. Fish and Wildlife Service under the Rare and Endangered Species Acts of 1969 and 1973. The westslope cutthroat trout (Salmo clarki subsp.) was listed in 1973 as a "Status Undetermined" species in the Flathead drainage, Montana. This subspecies inhabits mountain streams and is apparently very sensitive to habitat changes.

During a partial stream inventory in the Challis Unit, Rabe, et.al., found fair populations of cutthroat trout in upper Road and Kinnikinic Creeks that appeared from their markings to be westslope cutthroat trout. There was no attempt to have an ichthyologist positively identify them.

Westslope cutthroat are know to occur in tributaries of the Middle Fork of the Salmon River, as well as other streams in Idaho. Populations of this subspecies may also occur in headwater reaches of other tributaries to the upper Salmon River, either above or below the unit, because detailed fishery inventories have not been conducted on many streams. For this reason, westslope cutthroat may be more widely distributed than realized.

The Idaho Department of Fish and Game does not have an official list of endangered or threatened fish and wildlife. However, in Idaho Environmental Overview, the department lists the following fishes that occur in the unit as "species of special concern":

1. Westslope Cutthroat Trout. Regionwide streams; status - stable only where wilderness conditions exist, species especially sensitive to changes in stream habitat from land use (erosion) and to fishing pressure. Trend - generally downward by encroachment of civilization and resultant habitat loss or degradation.

2. Sockeye Salmon. Upper Salmon River, Redfish Lake; Run nearly or possibly extinct as a result of heavy mortality of adults in Columbia (disease, nitrogen supersaturation, passage at dams).

3. Spring and Summer Chinook. Salmon River and East Fork; Custer County entire length and tributaries. Status - declining. 1/

4. Steelhead. Salmon River and East Fork; Custer County entire length and tributaries. Status - Declining. 1/

5. Whitefish. Salmon River and East Fork; Custer County entire length and tributaries. Status - Stable. 1/

6. Dolly Varden. Salmon River and East Fork; Custer County entire length and tributaries. Status - Undetermined. 1/

7. Cutthroat Trout. Salmon River and East Fork; Custer County, tributaries. Status - Undetermined. 1/

1/ Limiting factors - stream channel alteration, irrigation diversion, and overgrazing.

VISUAL RESOURCES

Landscape Character

The Challis Planning Unit is located in the mountains of south-central Idaho. The most pronounced characteristic of the landscape is naturalistic, with great variety in the basic elements of form, line, color, and texture. Dominant colors are the reds, browns, and grays of soils and rocks, and vegetative colors in various shades of green, yellow, and gray. The topography is rolling, folded (undulating), and very rugged. Lines are distinct in the layering of soils and rocks, ridge-lines, and drainage patterns. Texture results from numerous rock outcrops, erosion patterns, and vegetative types.

The natural character of the unit is somewhat tempered by the presence of rural development in the valleys, where green agricultural fields are projected against the reds, tans, and browns of the back-ground hills (FIGURE 2-43).

There are high plains, foothills, and mountain peaks flanking the east and west sides of the unit.

One broad, open valley (Round Valley) is located at the north end of the unit. This is the location of the city of Challis, the major population center (700 residents) in the unit.

Past volcanic activity with associated geological structures are exposed by the actions of erosion. The east side of the unit is flanked by the Pahsimeroi Mountains in the Big Lost River Range. These mountains are very dominant landscape features, especially near the south end of

the unit, where peaks exceed 10,000 feet in elevation. Below the Pahsimeroi Mountains are Antelope and Little Antelope Flats, both broad, sagebrush-covered plains. The northern boundary of the unit is Challis Creek, where the valley aspect is most pronounced. Directly east of Challis Creek is a low range of white hills which fall off sharply into the Salmon River.

FIGURE 2-43 AGRICULTURAL AREAS INTERSPERSED WITH NATURAL SETTINGS FORM A "PATCHWORK" ON THE LANDSCAPE.

The Salmon River Mountains form the northwestern boundary of the unit. The highest point, just outside the unit, is 10,270-foot Bald Mountain. Thompson Creek is the most westerly boundary between national resource land (NRL) and National Forest Land. The southwest corner of the unit includes the headwaters of the East Fork of the Salmon River.

There are three principal drainage patterns in the unit: the Salmon River, the East Fork, and Warm Springs Creek. The Salmon River enters the unit on the western edge and runs to the north along the west edge leaving the unit at its most northerly point. About eighteen miles

above Challis, the Salmon is intersected by the East Fork which has its origin in the southwest corner of the unit (FIGURE 2-34). These two rivers flow through restricted valleys, flanked by rugged terrain. In contrast, the Warm Springs drainage forms a major flood plain, but itself is not a major landscape feature. The creek heads below Willow Creek Summit in the southeast corner and extends north to its confluence with the Salmon River just south of Challis. The topography is gentle by comparison to the other drainages.

Between these three drainages, the topography is much more gently rolling, except for Lone Pine Peak rising to nearly 10,000 feet in the northern portion. From the east and north, the Lone Pine Range is the most dominant landscape feature in the central part of the unit.

A unique landscape feature is a narrow canyon cut by Warm Springs Creek. This canyon is aptly named Grandview, and is referred to as a miniature Grand Canyon because of the sharp, steep-walled cliffs and balanced rocks. Highway 93A follows Warm Springs Creek through Grandview Canyon.

Two natural lakes (Jimmy Smith and Herd) created by rockslides are located on tributaries to the East Fork of the Salmon River. The natural setting of Herd Lake (FIGURE 2-44) is much more impressive than that of Jimmy Smith Lake because of the rugged topography and variety in vegetative patterns, but both are located in interesting settings.

From almost any high point in the unit, the landscape features of the surrounding country form an impressive backdrop. The view to the south is most spectacular since it includes Mount Borah (the highest

point in Idaho), the Boulder and Pioneer Mountains, and the White Cloud Peaks.

FIGURE 2-44 HERD LAKE. The debris is from landslides which resulted in formation of the lake.

Landscapes adjacent to the East Fork and Salmon Rivers (proposed Garden Creek, East Fork, Sullivan Creek, Squaw Creek, Spud Creek, and Bald Mountain Allotments) contain the most variety in the elements of form, line, color, and texture. The rugged topography and vegetative patterns, including patches of timber, and coloration of reds, browns, tans, grays from soils, rock formations, and vegetation all contribute to this variety.

Of all the proposed allotments, portions of Warm Springs and Peck Canyon have the least variety in landscape features. The area within the proposed Bald Mountain Allotment has the most interesting variety. It includes topography from the Salmon River to Poverty Flat, a unique tree-covered plateau located at the 9,000-foot elevation. Color variations from the rock outcrops and vegetative patterns are distinct.

Visual Resource Management

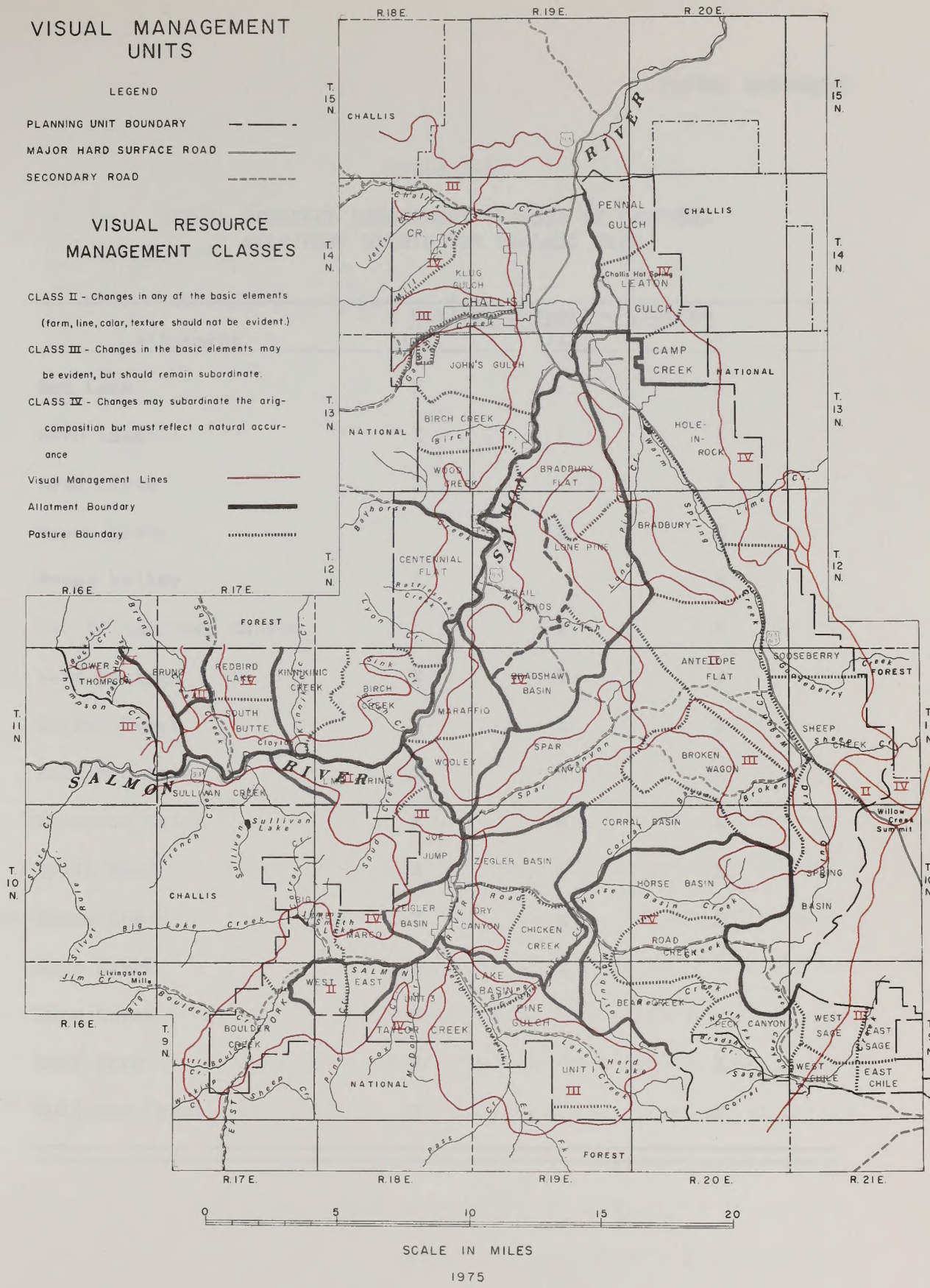
The visual resource is defined as the land, water, vegetation, animals, and other visible features.

To evaluate and quantify the visual resources of the Challis Unit, visual management units with visual resource management (VRM) classes were developed utilizing procedures in Bureau of Land Management (BLM) Manual 6300, Visual Resource Management.

Management units and VRM classes are based on three factors: the scenic quality rating (see following Recreation Resources Section), a sensitivity evaluation (see APPENDIX 2-I map), and a visual zone map (the location of each viewing area from the use area such as road, river, or observation point). MAP 2-18 shows management units and appropriate VRM classes.

TABLE 2-27 contains the VRM classes by proposed allotment. Generally, the VRM classes which apply to the Challis Unit are:

Class II - Changes in any of the basic elements of form, line, color, or texture should not be evident in the management activity. This class includes those lands in view from the major traveled routes U.S. 93, U.S. 93A, and the East Fork Road. There are few BLM activities directly visible from these roads on lands in quality class II. The exceptions are minor developments associated with visitor use facilities along the Salmon River and the East Fork of the Salmon River, and construction of the Herd Creek access road and bridge (FIGURE 2-45; MAP 2-19 in following Recreation Resources Section). The roadcuts have added unnatural lines and changed some erosion patterns.



MAP 2-18 VISUAL MANAGEMENT UNITS AND VISUAL RESOURCE MANAGEMENT CLASSES OF CHALLIS UNIT.

TABLE 2-27

VISUAL RESOURCE MANAGEMENT CLASSES BY PROPOSED ALLOTMENT WITHIN THE CHALLIS UNIT

Allotment	Quality Objective Classes		
	II	III	IV
Red Lake	X		X
Herd Lake	X	X	X
Road Creek	X		X
Bruno Creek		X	X
Round Valley	X		X
San Felipe/Peck Canyon		X	X
Warm Springs	X	X	X
Garden Creek	X	X	X
Bald Mountain	X	X	X
Thompson Creek	X	X	X
Split Hoof	X	X	X
Squaw Creek	X	X	X
Spud Creek	X	X	
Pine Creek	X		
East Fork	X		X
Sullivan Creek	X		X

FIGURE 2-45 LOWER HERD CREEK ROAD IN VISUAL RESOURCE MANAGEMENT CLASS II. The roadcuts have added unnatural lines and altered the natural rock coloration.

Class III - Changes in basic elements may be evident, but should remain subordinate to the visual strength of the existing character. Management units in this class include the Thompson Creek drainage, Squaw Creek, Spar Canyon, Herd Creek to Herd Lake, Broken Wagon Creek, and the Thousand Springs Valley (within the proposed San Felipe/Peck Canyon Allotment). Some past BLM activity in these units has resulted in dominant changes to basic elements.

Construction of the Herd Creek road, especially the section above Herd Lake, changed natural lines, colors, and texture. The roadbed was built in the material which slid down to create the lake by damming Lake Creek (FIGURE 2-46). The roadcuts disturbed the natural colors and texture of this rubble material by exposing underlying soil colors and rearranging the boundaries and talus.

FIGURE 2-46 THE HERD CREEK ACCESS ROAD ABOVE HERD LAKE. Road was constructed in the rockslide which formed the lake.

Utilizing procedures in Bureau of Land Management (BLM) Manual 6111, Quality Evaluation, the Challis Unit scenery was rated as shown in TABLE 2-28 and MAP 2-20.

In Thousand Springs Valley (within the proposed Peck Canyon Allotment), plow and seed projects have changed the color and texture of this sagebrush-covered plain. The coloration of the crested wheatgrass and the blocked plow areas result in the unnatural contrast (FIGURE 2-47). There are other activities in view in Class III units, but most remain subordinate to the existing landscape character.

FIGURE 2-47 SAGEBRUSH PLOWING AND SEEDING CHANGE THE NATURAL LANDSCAPE ELEMENTS OF LINE, COLOR, AND TEXTURE.

Class IV - Changes may subordinate the original composition and character, but must reflect what could be natural occurrence in the character. This class involves most of the national resource land in the unit. Past BLM practices that may have violated this objective class are: fence line brushing prior to construction, vegetative manipulation, project road locations, pipelines, and timber harvest activities.

TABLE 2-28

QUALITY EVALUATION OF CHALLIS UNIT SCENERY AS A RECREATION RESOURCE

Rating Area	Total Score	Class
Lower Salmon & East Fork	13	B
Warm Springs	10	B
Central Part of the Unit	10	B
San Felipe	8	C
Upper Salmon River	21	A
Upper East Fork	16	A
Round Valley	10	B

Class A Scenery - Excellent
Class B Scenery - Good
Class C Scenery - Fair

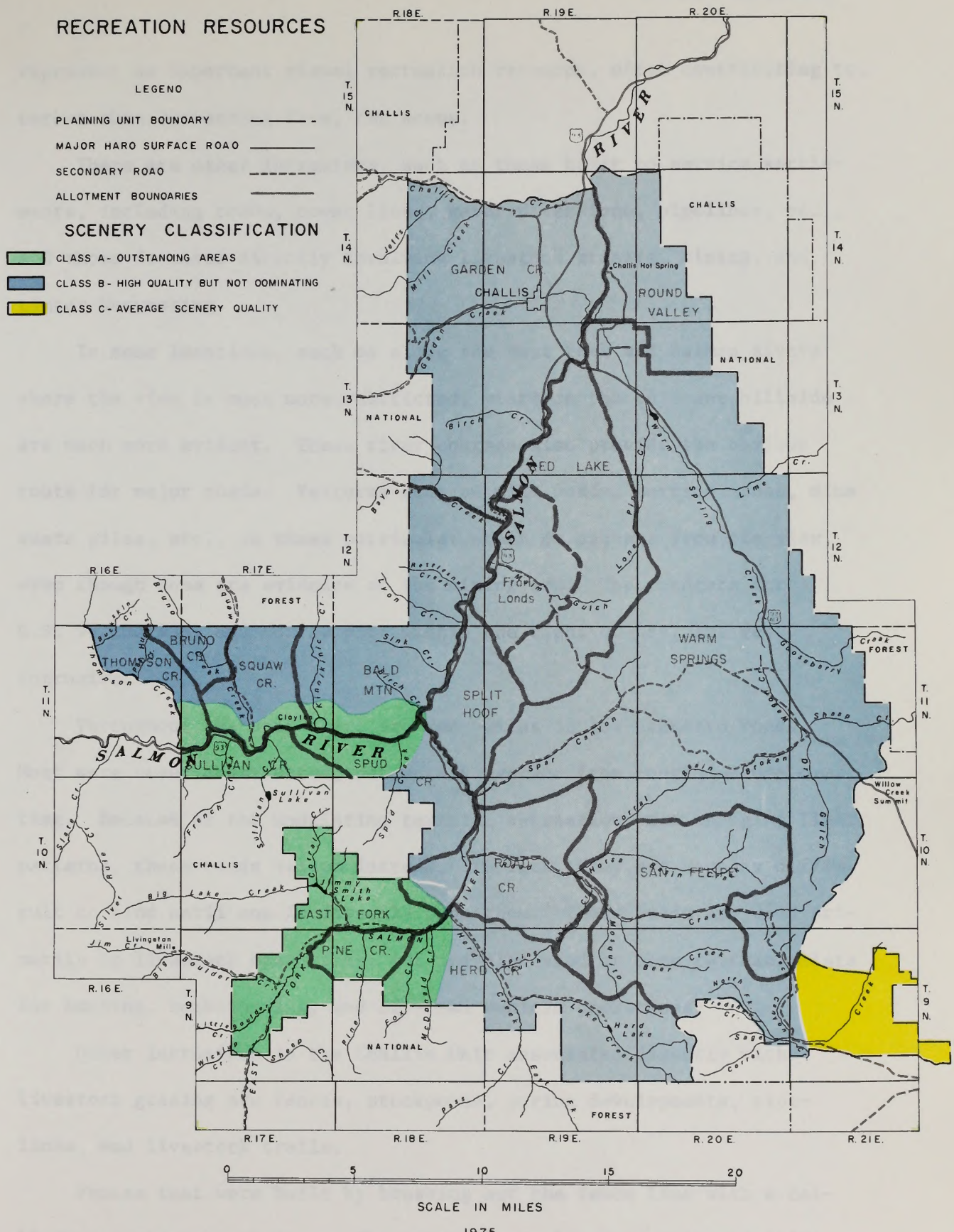
Intrusions

Intrusions are any modifications to the natural landscape resulting from the activities of man.

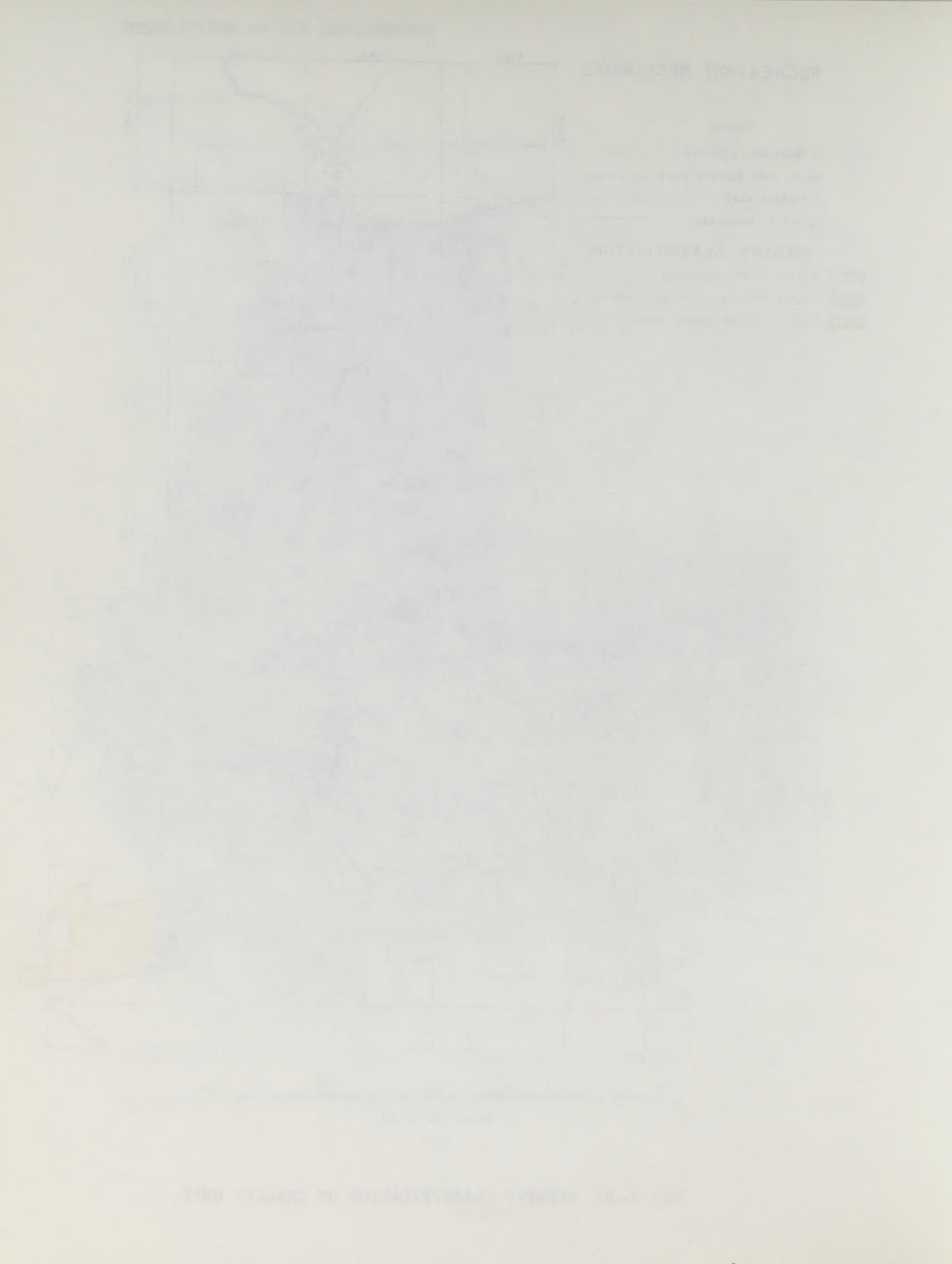
Intrusions in the Challis Unit with the greatest visual impact are those associated with settlement from the 1890s to the present. These intrusions include the early mining activities and subsequent development of farms and ranches in the valleys. There are still opportunities to view the remnants of early settlement, such as mining camps (FIGURE 2-48). Vintage homesteads, including log buildings with sod roofs, trace the farm and ranch settlement up to modern-day houses and outbuildings.

FIGURE 2-48 REMNANTS OF THE BAYHORSE MINE. Landscape modifications that are part of historical settlement in the Challis Unit contribute to the quality of the scene.

Although these features have modified or intruded upon the natural landscape, they are a special part of the mining-farming-ranching settlement pattern typical of the western United States. As such, they



MAP 2-20 SCENERY CLASSIFICATION OF CHALLIS UNIT.



represent an important visual recreation resource, often contributing to, rather than detracting from, the scene.

There are other intrusions, such as those built to service settlements, including roads, power lines, water diversions, pipelines, etc., and those features directly involving livestock grazing, mining, and timber harvesting.

In some locations, such as along the East Fork and Salmon Rivers where the view is much more restricted, scars on the adjacent hillside are much more evident. These river courses also provide the obvious route for major roads. Features such as mine roads, service lines, mine waste piles, etc., in these particular areas do detract from the view, even though some are evidence of the mining era. The roadcuts for U.S. 93 and 93A, and borrow pits within the right-of-way, are very intrusive.

Throughout the unit there are many miles of low-standard roads. Most were never constructed, but merely evolved from continued use over time. Because of the undulating terrain, vegetation, and changing light patterns, these roads seldom intrude. In fact, they are usually difficult to find until one is directly upon them. These roads are used primarily in livestock operations, but are also used by some recreationists for hunting, rockhounding, and off-road vehicle operations.

Other intrusions in the Challis Unit associated directly with livestock grazing are fences, stockponds, spring developments, pipelines, and livestock trails.

Fences that were built by brushing out the fence line with a catblade are the most obvious. The scars of pipelines are also visible,

even though they have been revegetated. The resulting vegetative pattern creates a line in the landscape. These features are often masked by the landscape, vegetation, and light patterns.

Because domestic livestock represent man's activities, they might be considered a landscape intrusion, even though their presence is ever-changing. However, many people enjoy seeing livestock on the open range, being trailed, or rounded up.

Fence lines sometimes create unnatural lines by virtue of changed vegetation patterns. These sharply defined lines, referred to as "fence line contrasts," also occur in the valleys where agricultural lands are distinct from uncultivated lands.

Sharp lines can also be created by vegetative manipulation such as sagebrush spraying, plowing, or chaining, followed by seeding to a species such as crested wheatgrass. Sagebrush sprayings to release native vegetation can also create these changes but to a lesser degree. Such patterns are visible in the San Felipe/Peck Canyon Allotment south of Willow Creek Summit. Man has had a tendency to put such projects "on line," with resulting blocked landscape patterns.

Similar natural vegetation breaks result from wildfire, but fire creates a fringed or feathered-edge effect.

FIGURES 2-49, 2-50, & 2-51 show examples of Class A, B, and C scenery respectively.

FIGURE 2-49 CLASS A (EXCELLENT) STREAMSIDE SCENERY.

FIGURE 2-50 CLASS B (GOOD) SCENERY - CENTRAL PORTION OF THE CHALLIS UNIT.

FIGURE 2-51 CLASS C (FAIR) SCENERY - SAN FELIPE/PECK CANYON ALLOTMENT BELOW WILLOW CREEK SUMMIT.

RECREATION RESOURCES

The recreation resources in the Challis Planning Unit are varied and of extremely high quality (MAP 2-19).

Scenery

The unit is very scenic. Contributing to the quality of the scene are rugged topography, rock outcroppings and formations, interesting vegetative patterns, coloration, unique geological formations, and in some places, the presence of moving water, e.g., the Salmon and East Fork Rivers.

As discussed in the preceding Visual Resources Section, there have been numerous modifications to the natural landscape of the unit. Many of these intrusions add rather than detract from the scene, because of their direct association with western settlement. However, certain intrusions, such as powerlines with service roads, do detract and reduce the quality of the scenic resource. The degree to which they detract depends on the sensitivity and/or location of the viewer.

One condition that adds to the scene, is the coloration of the surrounding hills. These colors are primarily earth tones of tan, brown, and red. The colors change with the seasons, and more subtle changes occur during each day as the sun moves across the sky creating unique shadow and light patterns.

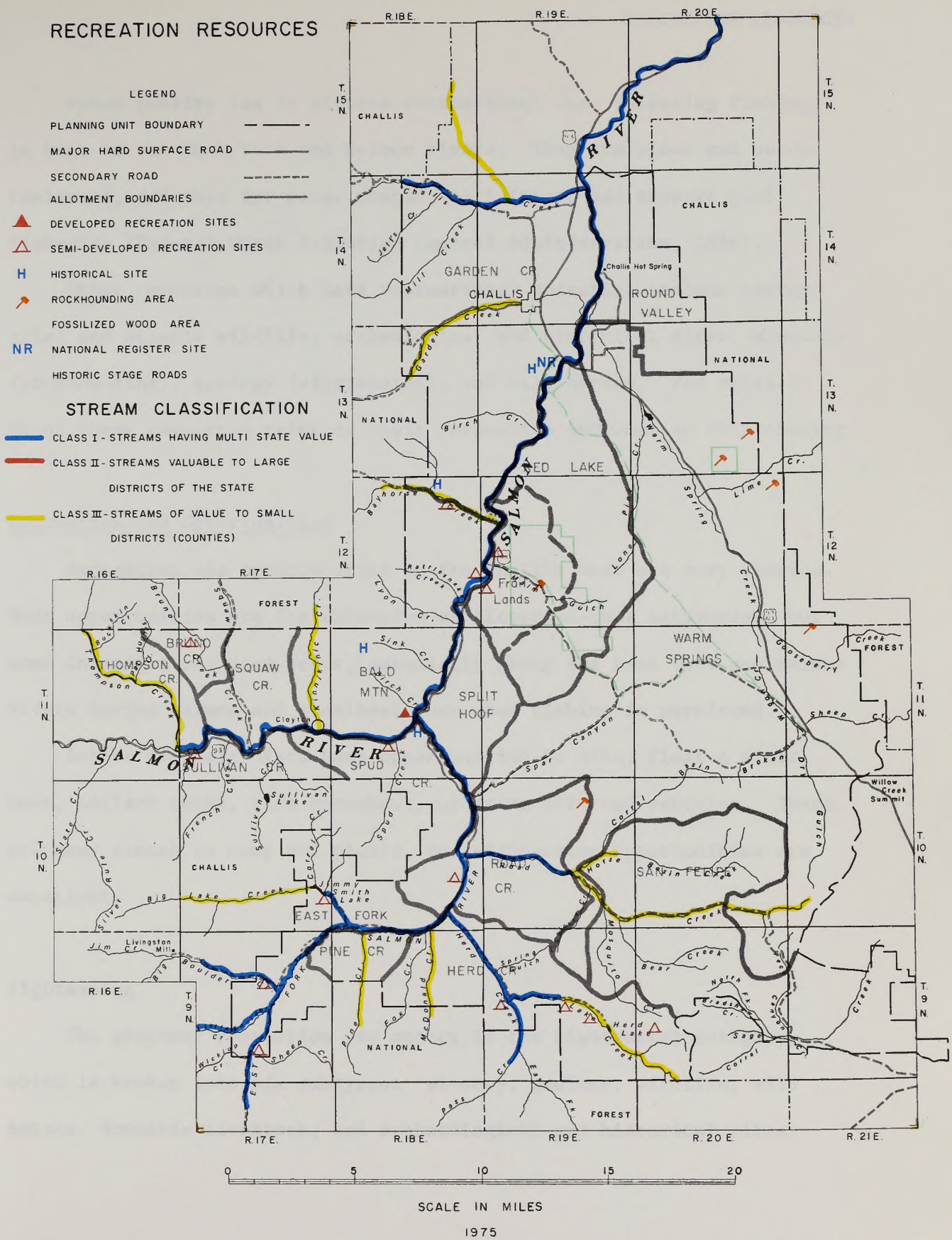
Water Bodies

There are three types of water bodies in the unit which afford recreational opportunities: natural lakes, rivers, and perennial streams.

The lakes are both on tributaries of the East Fork River. Jimmy Smith Lake covers approximately 45 acres, Herd Lake about 23 acres.

The East Fork and main Salmon Rivers are both high quality waters, and meet the criteria for inclusion in the National River System. As yet, neither river has been added to the list of study rivers under PL 90-542, but both have been nominated to the Bureau of Outdoor Recreation for inclusion.

There are seventeen streams tributary to the Salmon and East Fork which support a quality fishery. These streams and rivers have been rated under a stream classification system developed by the Idaho Fish and Game Department (TABLE 2-29).



MAP 2-19 RECREATION RESOURCES OF CHALLIS UNIT.

Water quality (as it affects recreational use, including fishing) is high in the East Fork and Salmon rivers. They are clean and uncontaminated, suitable for water contact activities, and support good fisheries (Federal Water Pollution Control Administration, 1968).

Other resources which have recreational potential include terrestrial and aquatic wildlife, archeological and historical sites, minerals (rockhounding), geology (sightseeing), and wild horses. For details about these resources refer to their respective sections in this chapter.

Recreation Use Opportunities

Recreation use opportunities in the Challis Unit are very diverse. Most opportunities are for extensive or dispersed-type activities, but some intensive use does occur, especially along the East Fork and Salmon Rivers during salmon and steelhead runs when fishing is permitted.

Active recreationists have opportunities to hike, float a river, hunt, collect rocks, ride horseback, or drive off-road vehicles. There are many places to camp and picnic, and sightseeing opportunities are excellent.

Sightseeing

The greatest recreation use occurs in the sightseeing category, which is broken into six subtypes: scenery, geology, wildlife, wild horses, domestic livestock, and archaeological and historical sites.

TABLE 2-29

CLASSIFICATION OF STREAMS AND RIVERS WITHIN CHALLIS UNIT 1/

Stream/River	Class
Garden	III
Challis	III
Mill	III
Bayhorse	III
Kinnikinic	Lower IV Upper III
Squaw	I
Thompson	III
Slate	I
Big Lake	Lower I Upper III
Big Boulder	I
Little Boulder	I
East Fork	I
Herd	I
Lake	III
Road	Lower I Upper III
Spar Canyon	IV
Warm Springs	IV
Salmon River	I
Sage	Not Rated
Mosquito	Not Rated
Bear	Not Rated

I - Waters with multi-state value.

II - Waters of value to large districts of the state.

III - Streams of value to small districts (counties).

IV - Streams of restricted local value.

1/ Source: Idaho Fish and Game Department. See MAP 2-19.

Whether by plan, or inadvertently, while traveling U.S. 93 or U.S. 93A, many people enjoy the unit's outstanding scenery and geologic features, plus the opportunity to view wildlife. The fact that sightseeing rates so high in the unit supports the finding in the Idaho State Comprehensive Plan (SCORP) that sightseeing (driving for pleasure), both by residents and nonresidents, is the number one participation activity in Idaho.

Scenery. In addition to travel along the primary and secondary roads, another sightseeing opportunity exists for those floating the East Fork or Salmon Rivers. The scenic vista from either river is different than it is from paralleling roads. In many stretches of the rivers, the view is more restricted by riparian vegetation and rock bluffs, often providing a tunnel effect.

At any point in the unit where the viewer can gain elevation, views unobstructed for miles (FIGURE 2-52) are possible. The backdrop to the south formed by the Lost River Range, Boulder-Pioneer Mountains, and the White Cloud Peaks, adds considerably to the total scene.

Air quality seldom limits the field of view.

Geology. Although there are variations in line and texture provided by vegetative patterns, the geologic features and associated colors provide the greatest interest. There is evidence of volcanic activity and sedimentation, much of which has been exposed by the forces of erosion.

FIGURE 2-52 SCENIC VISTAS ARE ENJOYED FROM HIGHER ELEVATIONS.

Wildlife. There are opportunities to view and study many different wildlife species, such as big game, small mammals, game and nongame birds, and reptiles.

The big game animal most normally viewed during the recreation season is the pronghorn antelope. They are most readily seen along U.S. 93A, but chances to see them increase substantially on side trips through Spar Canyon or up Dry Canyon and through Road Creek to the East Fork.

During the summer, other big game species are normally at higher elevations on summer ranges. An occasional deer may be seen, especially in the agricultural fields along the East Fork. During the winter, elk, deer, and bighorn sheep migrate to lower winter ranges on national resource lands (NRL). Elk are often seen wintering near Willow Creek

Summit. Bighorn sheep are observed near Ziegler Basin on the East Fork, and near Birch Creek, a tributary of the main Salmon River.

Beaver activities can be viewed in Thompson, Pat Hughes, Buckskin, Herd, Kinnikinic, Road, and Bruno Creeks.

Many other wildlife species, including raptors and songbirds, are found in the unit.

Wild Horses. A herd of about 407 horses and 3 burros presently roam the unit. Since these animals range from U.S. 93A to U.S. 93, the vast central portion of the unit, they might be seen from either route. However, they are more regularly viewed along Spar Canyon or Road Creek, or from various high points or side roads adjacent to these routes.

Domestic Livestock. Although taken for granted by most westerners, the opportunity to view domestic livestock (cattle, sheep, and horses) on the range, or activities such as trailing or roundup is very important to people from the East or urban areas anywhere in the country. These opportunities are normally best in the spring or fall, before animals leave for, or after they return from, high summer ranges in the surrounding National Forests.

The fact that domestic livestock contribute to the pastoral western scene and are an important resource, is well documented in the legislative history of PL 92-400, which established the Sawtooth National Recreation Area.

The observance of any wild or domestic animals in the natural environment is an important experience to some people. By priority, it

is assumed recreationists would most value sightings of big game, followed by wild horses and domestic livestock. Therefore, it is assumed that from the standpoint of the recreationist, any competition for suitable habitat would be weighed by the above priority and assigned to the class of animals accordingly.

Watersports

In addition to fishing, the East Fork and main Salmon Rivers offer limited opportunities for rafting, kayaking, power boating, and swimming. Present use for these activities is light. As pressure increases on other float rivers, there may be additional demand for such use on the East Fork and Salmon Rivers.

Hunting

This activity is second to sightseeing in popularity. Huntable populations of big game, upland game birds, small game, and waterfowl exist in the unit.

For those willing to work at it, with few exceptions the entire unit is open for public hunting. For those desiring to hunt via vehicles (trail machine or four-wheel drive) there are also few limitations. The only areas on NRL closed to hunting are designated recreation sites.

Hunting as a recreation activity has been rated according to procedures in BLM Manual 6111, Quality Evaluations: Class A - Excellent, Class B - Good, Class C - Fair.

Unit-wide the ratings are as follows:

Deer	Class B
Antelope	Class B
Elk	Class C

The number of big game hunter-days showed a steady increase through 1969, when use peaked and fell off in later years. The peak may have been related to the two-deer harvest in the unit.

Fishing

Fishing is next in popularity behind sightseeing and hunting. A sharp reduction in use levels occurs during closure of the Salmon and East Fork to fishing for anadromous species as occurred in the 1975 season.

A number of tributary streams, as well as the Salmon and East Fork, support good fisheries.

Herd Lake is open year-round to fishing and Jimmy Smith Lake is open only in the winter.

The Salmon River runs for about 30 miles through the unit. Trout season extends from June 1 to November 30. The East Fork above the Herd Creek bridge and Herd Creek are open to trout fishing only between September 15 and November 30.

Many recreationists other than fishermen enjoy observing native fish in streams or beaver ponds, and the sight of salmon and steelhead spawning or working their way up a tributary stream. Therefore, recreational value of the fishery resource is based on both consumptive and nonconsumptive uses.

Collecting

There are opportunities to collect many different types of rocks, some of gem quality. Fossilized wood specimens can also be collected on the unit in accordance with specific BLM regulations. The Challis area is highly mineralized. Access to the unit is considered to be good for "rockhounds," and these enthusiasts can be encountered most anywhere in the unit.

Off-Road Vehicles

These vehicles (trail bikes, motorcycles, and four-wheel drives) are used primarily as transportation in conjunction with other forms of recreation. However, there are many miles of primitive roads and trails in the unit, and the opportunities for riding are almost limitless.

In addition to providing access, these primitive roads offer the opportunity to challenge the vehicle and skill of the driver, especially the four-wheel drive operator.

There are no maps showing all the available roads and trails, and the user must seek out the opportunities. In the central portion of the unit, where terrain is not quite as rugged as along the Salmon River, it is possible to reach almost any point via existing primitive roads.

These roads are used more by ranchers in their livestock operations than by recreationists.

Although four-wheel drive vehicles are used the most by the ranchers, recreationists, and BLM in administration, trail bike use increases during hunting season.

There are no administrative restrictions to off-road vehicle travel in the unit.

A closure to snowmobiles is contemplated to protect wintering elk near Willow Creek Summit.

Primitive Experience

By applying the criteria in the Wilderness Act, PL 88-577, it was determined that no roadless areas in the Challis Unit qualified for "primitive" designation. Existing roadless areas in the unit are quite limited in size, under 5,000 acres, and most of the area is accessible by low-standard roads.

However, opportunities exist to seek solitude away from evidence of man's activities.

Because roads, pipelines, fences, etc., are generally screened from view by the undulating terrain and vegetation, it is possible to be "lost" and obtain a feeling of seclusion in the area generally referred to as Horse Basin. Most of the access roads follow ridgetops or drainages. Much of the unit can be explored on foot without encountering the activities of man. Present use of the unit by those seeking a primitive experience is light.

Visitor Use

There is very limited data on actual recreation use of the Challis Unit. Recreation use, except that associated with sightseeing, hunting, and fishing, is considered to be light.

It is assumed that the dispersed recreation use levels are low because of the unit's close proximity to the Sawtooth National Recreation Area (SNRA). People entering the SNRA from the East Fork side cross national resource land.

Sightseeing

The presence of two major highways through the unit accounts for sightseeing being the most popular recreation use. Traffic counters on these two highways provide data on the number of highway users. During the summer months, a high percentage of the travelers are tourists heading for various off-unit recreation destinations. The 1970 traffic count on U.S. 93A showed 93,866 vehicles with an annual daily traffic (ADT) count of 284, and U.S. 93 was traveled by 197,100 vehicles with ADT count of 540 (Idaho State Highway Dept., 1970). The State Highway Department informally predicted that traffic volume on U.S. 93 would increase at a rate of 3% per year beyond 1970 levels. Traffic volume data collected on U.S. 93 below Salmon City verified this trend through 1973, but use in 1974 and what has occurred so far in 1975 will not meet these expectations.

Hunting

It was estimated that nearly 16,000 hunter-days were expended in the unit by big game hunters in 1971. MAP 2-21 shows the deer, elk, and antelope hunting units in the Challis Unit. TABLE 2-30 shows the reported harvest of those species from 1970 through 1974.

There is considerable interest in hunting upland game birds such as chukar partridge.

Fishing

TABLE 2-31 contains estimated total fisherman-days and number of chinook salmon caught in the Challis Unit for the past six years. Jack Salmon, fish under twenty inches in length, are not included in the catch estimates because they are not required to be reported on the salmon permit.

Area 7 of the Salmon River is from the Pahsimeroi River to the East Fork, which is not the same geographical area as the Challis Unit. Salmon caught outside the unit (downstream fourteen miles to the Pahsimeroi) are reported as part of the Area 7 catch, whereas fish caught in the unit between the East Fork and Thompson Creek (twelve miles) are reported as part of the catch in Area 8. Although this discrepancy exists, these data are the best available and, therefore, provide the most precise estimate of the chinook salmon caught in the unit.

About 14% of the total chinook catch in Idaho during 1969-74 was made in Area 7 of the Salmon River and the East Fork, indicating the importance of this stream for salmon production.

TABLE 2-30

REPORTED HARVEST OF DEER, ELK, AND ANTELOPE BY HUNTING UNIT
1970-1974 [1]

Hunting Unit and Species	Year	Reported Harvest	Challis P.U. BLM Land in Hunting Unit (Acres)	Percent Harvest Dependent on Challis Unit	Annual Harvest Dependent on Challis Unit [2]
36-A					
Deer	1970	1,178	220,100	94	1,107
	1971	79			74
	1972				-
	1973	145			-
	1974	300			282
236-A					
Elk [3]	1970	14		70	-
	1971	14			-
	1972				25
	1973	18			15
	1974	7			5
436-A					
Antelope [3]	1970	38		100	38
	1971	41			41
	1972	46			46
	1973	40			40
	1974	40			40
36-B					
Deer	1970	1,611	97,300	30	483
	1971	729			218
	1972	108			32
	1973	180			54
	1974	506			152
Elk [3]	1970	16	97,300	20	3
	1971	2			0
	1972	9			2
	1973	15			3
	1974	62			12
436-B					
Antelope [3]	1970	15		100	15
	1971	13			13
	1972	13			13
	1973	3			3
	1974	3			3

TABLE 2-30 (cont.)

REPORTED HARVEST OF DEER, ELK, AND ANTELOPE BY HUNTING UNIT
1970-1974 1/

Hunting Unit and Species	Year	Reported Harvest	Challis P.U. BLM Land in Hunting Unit (Acres)	Percent Harvest Dependent on Challis Unit	Annual Harvest Dependent on Challis Unit 2/
*37					
Deer	1970	309	50,600	30	62
	1971	182			36
	1972	147			29
	1973	59			12
	1974	120			24
Elk 3/	1970			20	-
	1971				-
	1972	Closed			-
	1973	Closed			-
	1974	Closed			-
Antelope 3/	1970	104		100	104
	1971	107			107
	1972	119			119
	1973	111			111
	1974	59			59

1/ (Idaho Fish and Game Department annual reports).

2/ (Hawks, 1973).

3/ Minimum kill: based on hunter card reports.

* That portion of the planning unit within the big game hunting unit.

People once came from all over the United States to fish for chinook in the Salmon River. In 1970, anglers from 32 different states fished for salmon in Idaho (Keating, 1971). Of those persons fishing for salmon during 1970-74, an average of 14% were nonresidents (Reingold, 1975). Several of the more popular salmon fishing holes are located on national resource lands, e.g., Deadman, Tunnel Rock, and East Fork Holes on the Salmon River and the Ziegler Hole on the East Fork (Corley, 1969).

The best estimate of the numbers of steelhead caught in the unit during 1969 through 1974 are listed on TABLE 2-32. Most of the fall steelhead fishery and catch is below the North Fork, where the fish are concentrated before migration into their respective spawning tributaries the following spring. A large fishery for steelhead has never occurred in the East Fork or upper Salmon Rivers.

Trout creel census data for individual streams in the Challis Unit are not available. However, catch data for trout caught in part of the unit and the vicinity of the Salmon River watershed immediately upstream from the unit were obtained at three checking stations operating primarily to obtain information on the salmon fishery. These checking stations are located near Challis, on Highway 21 (Banner Station), and on Highway 93 (Frenchman Station).

Comparable trout catch data for four years are compiled in TABLE 2-33. All rainbow, cutthroat, brook trout, Dolly Varden, kokanee (landlocked sockeye salmon), grayling, and whitefish were recorded as "trout" (Reingold, 1975). It is impossible to assign a percentage of the total catches or fisherman days to the Challis Unit.

TABLE 2-31

ESTIMATED CHINOOK SALMON HARVEST IN THE CHALLIS PLANNING UNIT, 1969-1974 [1/]

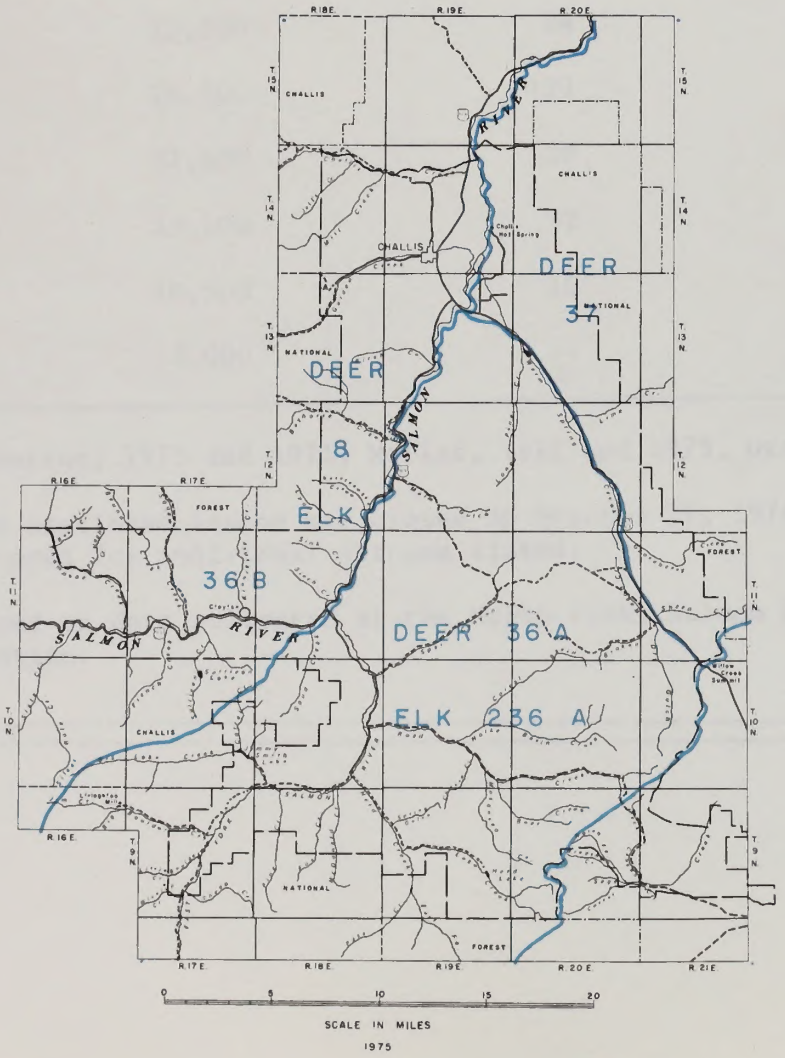
Year	Estimated Statewide Chinook Catch	Main Salmon River (Area 7)	East Fork	Planning Unit Totals		Fisherman [2/] Days per Fish	Calculated Fisherman Days in Planning Unit
				Number	Percent		
1969	11,500	1,602	651	2,253	19.6	6.6 [3/]	14,870
1970	5,500	559	180	739	13.4	7.1	5,247
1971	3,500	312	163	475	13.6	5.5	2,612
1972	6,500	453	161	614	9.4	5.8	3,561
1973	9,500	746	465	1,211	12.7	6.6	7,993
1974	1,500	133	90	223	14.9	7.8	1,739
1975	No Season						
Average	6,333	634	285	919	13.9	6.6	6,004

1/ (Keating, 1970 and 1971, Mallet, 1972 and 1973, and Ortmann, 1973-1975).

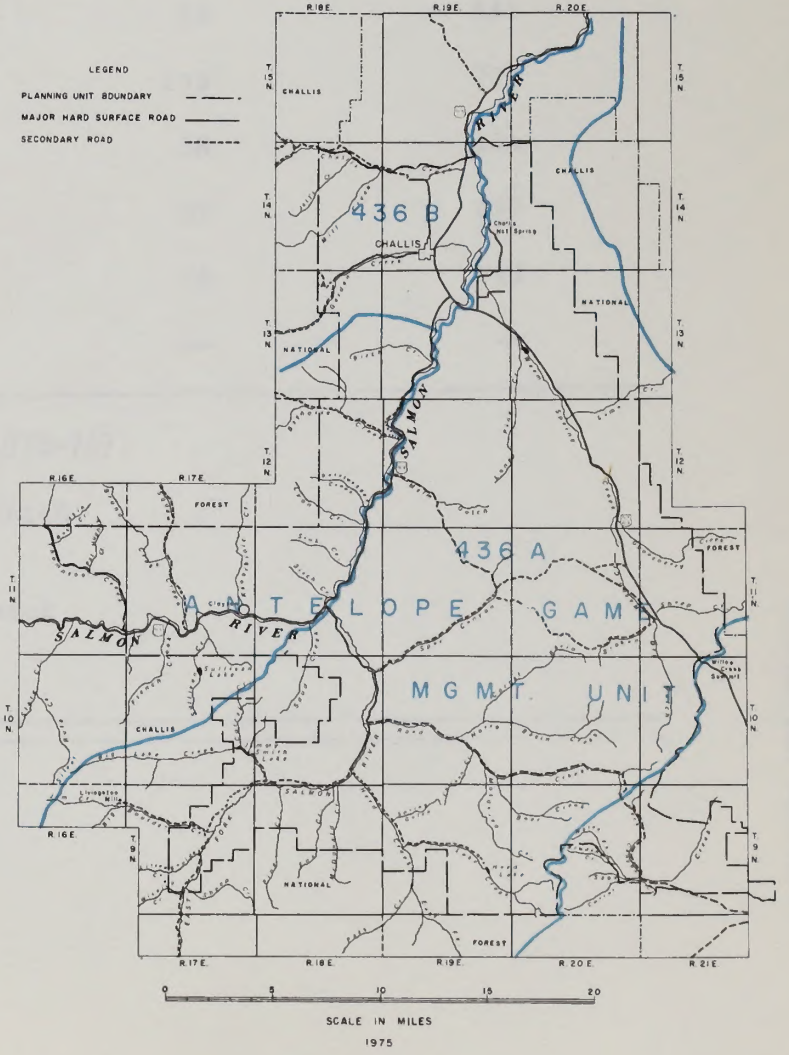
2/ (Reingold, 1975).

3/ Average for 1970-74.

MAP 2-21 DEER, ELK, AND ANTELOPE HUNTING UNITS IN THE CHALLIS PLANNING UNIT.



Deer hunting units 36A, 36B, & 37 and



Antelope hunting units 436A and 436B.

TABLE 2-32

ESTIMATED STEELHEAD TROUT HARVEST IN THE CHALLIS PLANNING UNIT [1/]

Year	Estimated Statewide Steelhead Catch	Main Salmon River (Area 7)	East Fork	Planning Unit Totals	Calculated Fisherman Days in Planning Unit [3/]
1969	15,500	84	9	93	437
1970	20,500	122	13	135	729
1971	17,500	38	0	38	144
1972	13,500	32	0	32	157
1973	10,500	10	0	10	49
1974	3,000 [2/]	--	0	--	--

1/ (Keating, 1970 and 1971, Mallet, 1972 and 1973, Ortmann, 1973-75).

2/ The steelhead season was closed on October 27, 1974. No catch records for individual streams listed.

3/ Based on data collected at the North Fork, Salmon River check station.

TABLE 2-33

SUMMARY OF TROUT ANGLER DATA COLLECTED AT SALMON HARVEST CHECK STATIONS DURING JUNE AND JULY, 1970-1972 and JULY, 1974 1/

	1970	1971	1972	1974
Number Angler Interviews	5,841	3,004	3,156	2,146
(Percent Non-resident)	(18)	(24)	(25)	(19)
Total Hours Fished	31,155	22,379	23,247	14,352
(Percent Non-resident)	(27)	(29)	(30)	(28)
Total Trout Caught	22,505	15,777	14,453	8,328
(Percent Non-resident)	(27)	(27)	(30)	(27)
Total Fisherman Days	27,347	6,714	6,960	4,692
(Percent Non-resident)	(24)	(30)	(29)	(28)
Hours per Trout	1.4	1.4	1.6	1.7
Residents	1.4	1.4	1.6	1.7
Non-residents	1.4	1.5	1.6	1.8

1/ (Reingold, 1971-1973 and 1975).

Eighteen to 25% of all trout anglers interviewed were nonresidents. They expended about 30% of the total fishing effort and caught trout at the same rate as residents. Hatchery-reared rainbow "catchables" released in the Salmon River usually make up about 75% of the total trout catch record at the three check stations. However, hatchery rainbow made up only 45% of the catch in 1974 due to extremely high water conditions. Anglers fished primarily in smaller tributary streams and mountain lakes where hatchery releases were not made (Reingold, 1975).

Some recreation use counts have been maintained at the East Fork Recreation Site. Although these data can be used to measure user trends, it is not a true reflection of visitor use in the unit since the site is used as an overnight and rest stop for U.S. Highway 93 travelers. Other semideveloped sites along the Salmon River are also used for this purpose. Use at the East Fork site showed a very erratic upward trend from 1966 through 1970. In 1971, use was down approximately 8% from previous years. In 1971, a total of 6,015 visitor-days (one visitor-day represents an accumulated total of twelve hours) were recorded at the East Fork site.

An estimated 123,100 visitor-days of recreation occurred in the Challis Unit in 1974. TABLE 2-34 provides a breakdown by recreation activity.

Facilities

Most visitor use on the unit is of the dispersed (extensive) type. Normally, these activities are carried out in a natural environment with man-made facilities limited to developed access.

TABLE 2-34

ESTIMATED 1974 VISITOR USE OF CHALLIS UNIT BY RECREATION ACTIVITY

Activity	Visitor Days
Sightseeing	80,400
Fishing	10,000
Hunting	20,000
Collecting	500
Off-Road Vehicle	200
Camping	12,000
Total	123,100

There is only one fully developed recreation site in the unit, the East Fork Recreation Site, and ten semideveloped sites (MAP 2-19 & FIGURE 2-53).

FIGURE 2-53 EAST FORK RECREATION SITE.

Most people camp or picnic in conjunction with some other activity. The trend in recreation has been to self-contained units, i.e., pickup campers, camp trailers, or motor homes.

Designated camp and picnic sites are normally closed to livestock grazing. Undeveloped sites are usually grazed.

One semideveloped BLM site near Little Boulder Creek, the Upper East Fork Site, is used as a staging area for pack trips and cross-country ski trips into the White Cloud Peaks portion of the Sawtooth National Recreation Area. Trips involving pack stock probably impact this site the most, depending on the time spent on the site prior to or following these trips.

AGRICULTURE

Livestock Grazing

The production of range beef cattle and calves is the predominant agricultural land use within the Challis Planning Unit. Thirty-eight permittees graze their cattle on twelve grazing areas within the unit. MAP 2-22 shows the grazing area boundaries and the existing range improvements. The acreage in each grazing area and the average animal unit months (AUMs) of forage used are shown in TABLE 2-35. The permittees utilize national resource lands (NRL) and/or National Forest Lands (NFL) with their private lands in order to have a yearlong ranching operation. The average yearlong ranching operation in the unit utilizes approximately 16% NRL, 14% NFL, and 70% private lands to produce its beef. The percentage by permittee is shown in TABLE 2-36.

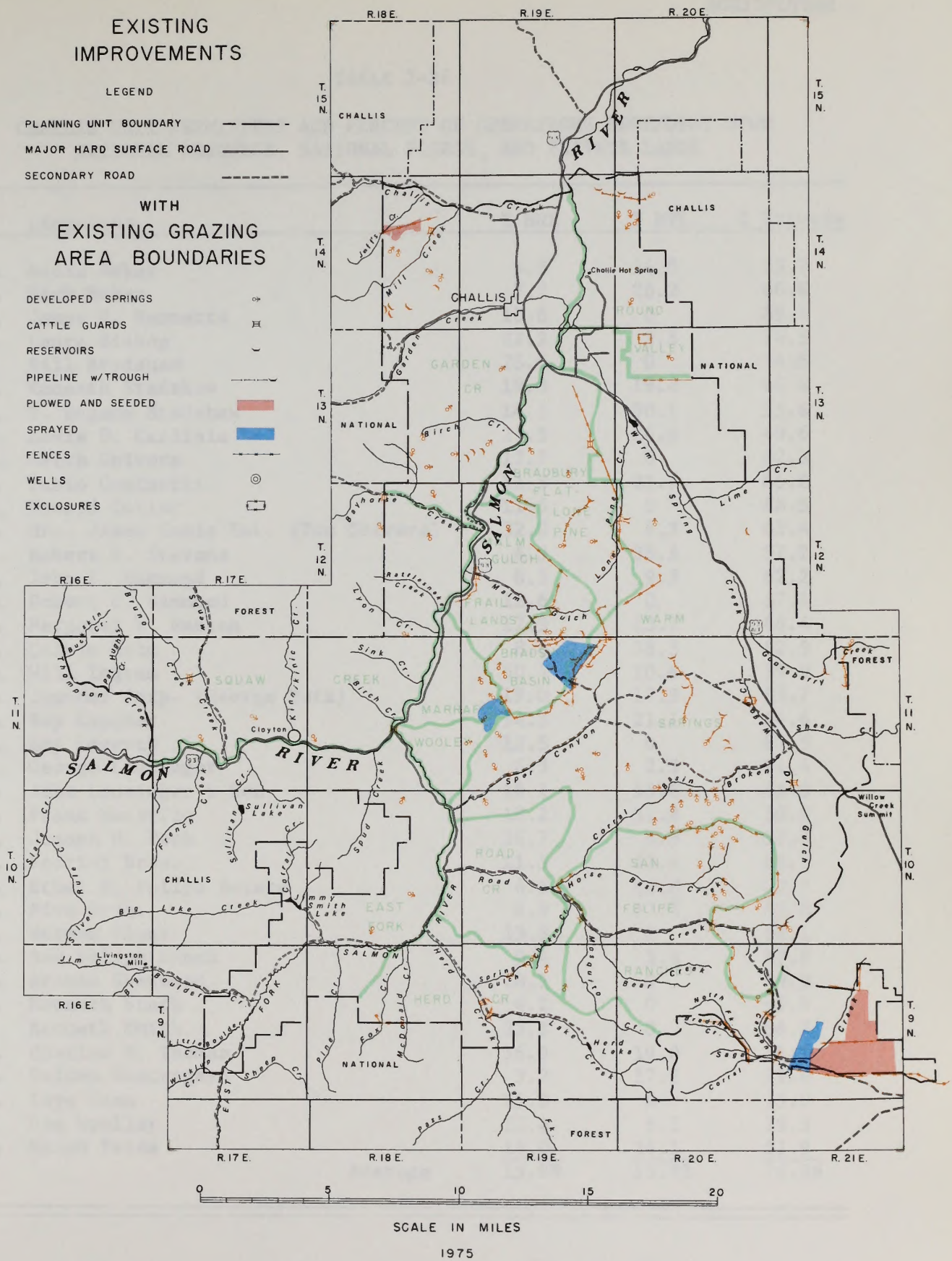
The permittees operate typical cow-calf operations. The cows are bred to calve between late January and April. Calves are weaned and sold in the late fall when they return from their summer-fall pastures. Typically, cattle are driven to the spring ranges on NRL between May 1 and May 16 and remain there for a month to six weeks grazing period. From there the animals are put on summer ranges in late June or July on either NFL, the Sawtooth National Recreation Area (SNRA) or on high elevation NRL range. In late summer the animals are driven to fall ranges on NRL or they are taken to private lands for grazing purposes.

TABLE 2-35

ACREAGE AND PAST USE OF EXISTING GRAZING AREAS

Grazing Area	Number of Permittees	Grazing Area NRL	Grazing Area State	Six Year Average Use AUMs Active	Six Year Average Use AUMs Non-use	AUM Base Property Qualifications	Remarks
Bradbury Flat Lone Pine	3	15,705	467	672	47	719	Total non-use in 1972.
Bradshaw Basin	6	7,490	590	420	528	948	
East Fork	10	33,220	1,920	1,186	48	1,234	
Garden Creek	11	30,458	880	930	743	1,673	
Herd Creek	3	22,384	2,304	1,222	189	1,411	
Maraffio	1	5,429	460	129	96	225	
Road Creek	2	12,895	843	451	10	461	
Round Valley	6	13,503	-	373	328	701	
San Felipe/Peck Canyon	1	38,900	2,435	3,287	77	3,364	
Squaw Creek	9	38,955	440	1,345	464	1,809	
Warm Springs	1	102,439	5,342	7,382	1,924	9,306	1120 acres private land in grazing area.
Woolley	1	2,986	640	57	0	57	
TOTAL	54*	324,364	16,321	17,454	4,454	21,908	

*Does not total 38 because one permittee may use more than one area.



MAP 2-22 EXISTING RANGE IMPROVEMENTS AND GRAZING AREAS IN THE CHALLIS PLANNING UNIT.

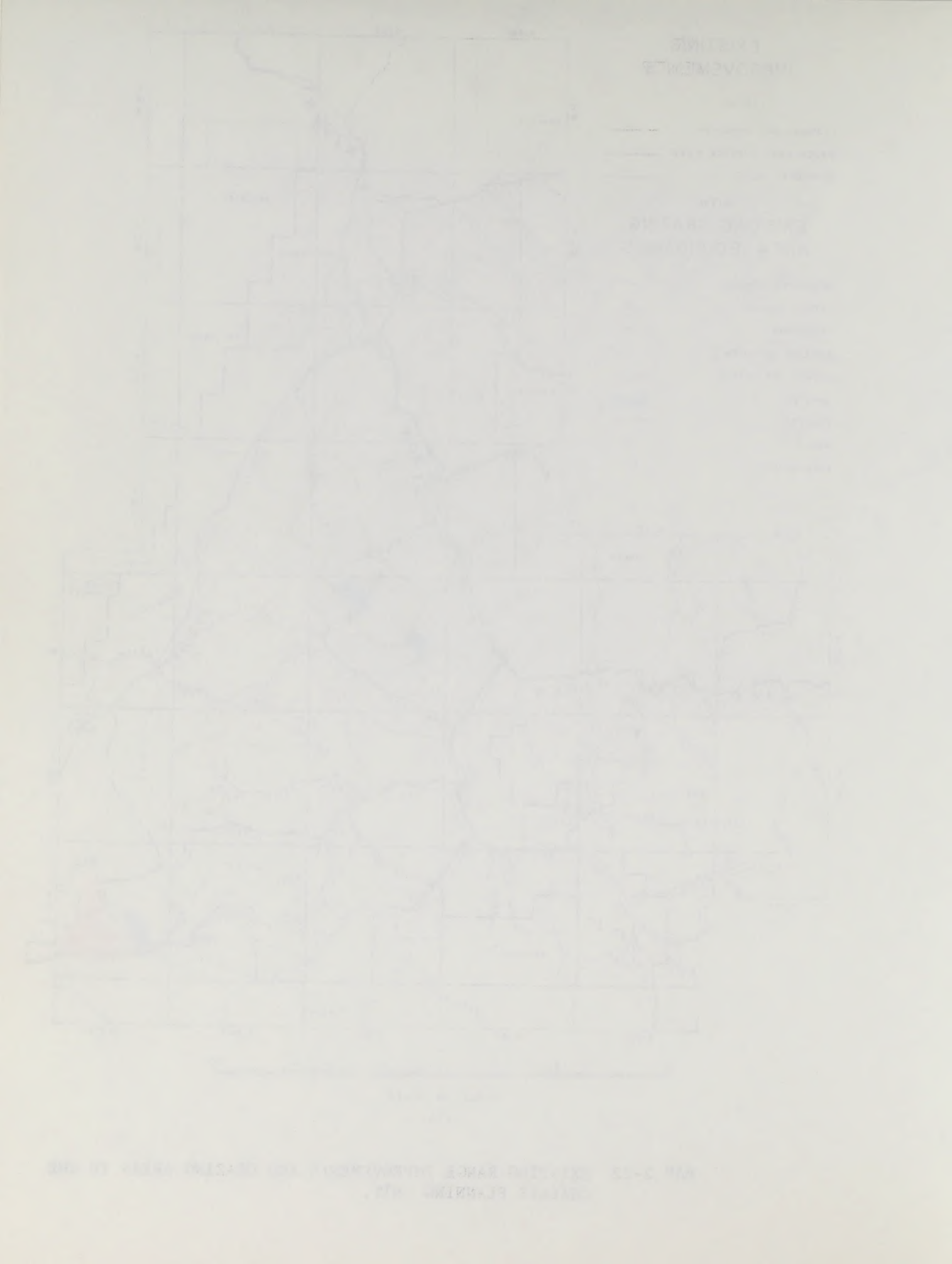


TABLE 2-36

CHALLIS UNIT PERMITTEES AND PERCENT OF OPERATIONS DEPENDENT UPON NATIONAL RESOURCE, NATIONAL FOREST, AND PRIVATE LANDS

	Licensees	% NRL	% NFL	% Private
1.	Eddie Baker	9.5	34.8	55.7
2.	Dick Baker	7.2	26.2	66.6
3.	James R. Bennetts	10.6	0	89.4
4.	Laura Bishop	22.2	3.5	74.3
5.	Bill Bradshaw	25.5	0	74.5
6.	Kenneth Bradshaw	19.8	19.8	60.4
7.	T. Eugene Bradshaw	14.3	30.1	55.6
8.	Lewis G. Carlisle	25.5	24.9	49.6
9.	Garth Chivers	17.7	0	82.3
10.	Fabio Cominotti	11.5	21.7	66.8
11.	Howard Cutler	11.5	0	88.5
12.	Mrs. James Ennis Est. (Tom Chivers)	32.3	4.3	63.4
13.	Robert G. Stevens	4.3	38.5	57.2
14.	John F. Hammond	8.3	9.5	82.2
15.	Robert C. Hammond	12.6	0	87.4
16.	Margaret B. Hansen	17.9	13.7	68.4
17.	Calvin Helm	8.6	38.5	52.9
18.	Will Ingram	50.4	10.6	39.0
19.	Jan-Mar Corp. (George Turk)	19.0	17.3	63.7
20.	Ray Keppner	14.3	21.1	64.6
21.	Ray Laverty	12.5	0	87.5
22.	George Leuzinger	6.3	2.3	91.4
23.	Jake Leuzinger & Son	19.1	15.6	65.3
24.	Frank Maraffio	18.2	31.8	50.0
25.	Joseph M. Peck	36.7	4.5	58.8
26.	Pedrini Bros.	11.5	23.4	65.1
27.	Ethel B. Philps Estate	4.5	12.8	82.7
28.	Piva Bros.	8.9	37.3	53.8
29.	Herman Pleus	13.9	0	86.1
30.	San Felipe Ranch	9.4	2.8	87.8
31.	Archie Sherwood	20.1	0	79.9
32.	Kenneth Stark	4.2	0	95.8
33.	Kenneth Smith	33.3	0	66.7
34.	Charles R. Thomas	16.9	19.0	64.1
35.	Golden Westergard	3.2	17.2	79.6
36.	Loye Wren	25.0	0	75.0
37.	Dan Woolley	12.4	8.1	79.5
38.	Ralph Yates	14.0	34.1	51.9
	Average	15.88	13.83	70.29

Hay, grain, and pasture produced on private, irrigated lands are used for winter feeding. Approximately 97% of the national resource lands within the Challis Unit are utilized for grazing purposes by the permittees licensed in the unit.

The existing range improvements within the unit are shown on MAP 2-22; TABLE 2-35 contains the average use by permittee for 1970 through 1975. The differences between the base property qualifications column and the active AUMs used column is the amount of non-use taken by each permittee, which allows the non-use, but retention of a specific number of licensed AUMs.

The following discussion briefly describes the licensed grazing use of the unit by grazing area.

Bradbury Flat/Lone Pine Area

Cattle are turned out sometime between May 1 and 16 to graze for spring and summer pasture. One permittee moves his cattle to the SNRA for summer and fall grazing, then trails them back to the base property. One permittee is permitted to graze his livestock on the area until mid-August, then trails them back to his base property. The third permittee leaves the area on July 15 for summer and fall grazing on private lands.

Insufficient stock water has been a problem for years in this grazing area.

Bradshaw Basin Area

Six permittees turn cattle out to graze on NRL between May 1 and May 12, and graze through late June. Three permittees drive their

cattle to the SNRA for summer and fall grazing. One permittee moves his cattle to the Challis National Forest for summer grazing and returns to another grazing area on NRL. One permittee returns to private lands for his summer and fall grazing. Insufficient stock water has been a problem on this grazing area for many years.

East Fork Area

Ten permittees turn cattle out to graze on NRL between May 1 and May 16 for spring grazing. Three permittees drive their cattle to the SNRA for summer and early fall pasture, four permittees drive their cattle to the Challis National Forest, and three return to private ranges for summer and fall grazing. Three permittees return from the SNRA to BLM grazing areas for late fall grazing. Two permittees have a two-week, late fall grazing privilege for trailing back to the base property.

Garden Creek Area

Cattle are turned out between May 1 and mid-June to graze on NRL for spring and summer pasture. Six permittees move their cattle to the Challis National Forest for summer and fall grazing. Four permittees return to their base property after the spring grazing season.

Herd Creek Area

Cattle are turned out on June 16 to graze NRL for summer and fall pasture. Yates' cattle are trailed to the base property by November 1. Ingram's herd is divided, with some cattle returning to the base property,

and the remaining staying on the lower elevation BLM pastures of the Warm Springs Allotment until December 16. The cattle are then moved to the base property for winter feeding. The calves are weaned and sold in late fall.

Maraffio Area

Maraffio turns his cattle out on May 1 to graze NRL for six weeks. The cattle are moved to NFL June 16 for summer and early fall grazing. They return to the Squaw Creek grazing area on October 1 and leave October 16.

Road Creek Area

Cattle are turned out to graze NRL between May 1 and May 10 for spring and summer pasture. Bradshaw drives his cattle back to his ranch on August 31. Yates moves 50 head of cattle from the Road Creek grazing area to the Herd Creek area, and takes the rest of his cattle to the Challis National Forest for summer and fall grazing.

Round Valley Area

Cattle are turned out between May 1 and 16 to graze NRL for spring and summer pasture. Bishop and the Philps Estate have customarily grazed the northern half of the area, the other licensees the southern half. Philps and Westergard move onto NFL for summer and early fall grazing, then return to their base property. The remaining licensees move their cattle to private ranges or return to base ranches by July 31.

San Felipe/Peck Canyon Area

Cattle are turned out to graze NRL from May 17 through September 29, with 160 AUMs being exchange of use.

Squaw Creek Area

Cattle are turned on NRL between May 1 and May 16 for spring and summer grazing. Nine permittees move part of their cattle to NRL for summer and early fall grazing and return to NRL for two weeks in the fall. The remaining are taken to other BLM grazing areas for summer grazing, and three permittees keep cattle in the Squaw Creek area all summer. The cattle are off NRL by mid-October.

Warm Springs Area

Ingram grazes three herds of cattle in separate areas. Herd No. 1 consists of 750 cattle that are turned out on May 1 to graze NRL in the Hole-in-the-Rock area. They then drift up through the Gooseberry and Sheep Creek areas. On July 1, the cattle are moved into the Road Creek, Spring Basin, Broken Wagon and Corral Basin areas until November 1. They are then taken into Dry Canyon, Gooseberry, and Hole-in-the-Rock areas. On approximately December 16, they are moved onto hay pastures at home base.

Herd No. 2 consists of 550 cattle. On May 10, approximately 225 head are turned out on Antelope Flat and 325 head are turned out along Spar Canyon. On July 1, the herds are rounded up and trucked to the SNRA for summer grazing. On October 15, they are brought down to the

west end of Spar Canyon and drifted through the canyon to the base property by October 31.

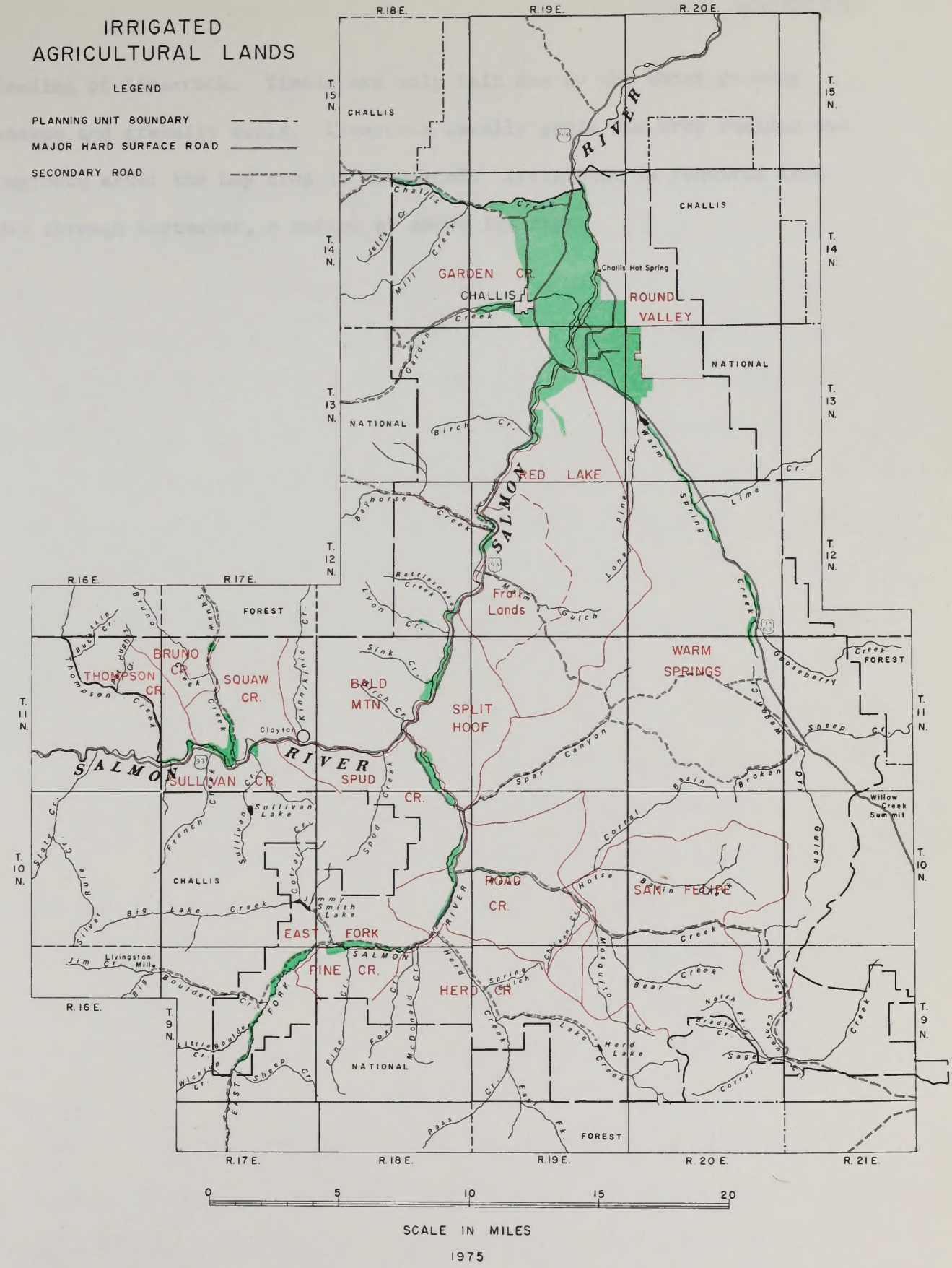
Herd No. 3 consists of approximately 616 cattle turned out in Bradbury Flat on May 1. On July 1, the herd is drifted through Corral Basin and taken to the Herd Creek grazing area for summer and fall grazing. On November 1, the cattle are divided and moved out of Herd Creek. Some are taken to lower BLM pastures in the Gooseberry and Hole-in-the-Rock areas. The rest are returned to the private property. The cattle are off NRL by December 16. The cattle remain on the private property until May 1.

Woolley Area

Cattle are turned out on May 1 to graze NRL for six weeks. Forty cattle are moved to NRL for summer and early fall grazing and the rest moved to private lands.

Farming

Suitable lands along the East Fork and Salmon Rivers are planted to alfalfa or pastures (MAP 2-23). The valley is rather narrow with moderate to steep sideslopes that frequently reach mountainous heights. Near Challis, the canyon opens into a large valley that is approximately seven miles long and three miles wide. The river flows centrally through the valley in a northern direction. Canals are used to divert water from the river to grow crops such as alfalfa, pasture, seed potatoes, and small grains. The irrigated lands, totaling some 10,000 acres, are devoted almost exclusively to the production of forage crops for winter



MAP 2-23 IRRIGATED AGRICULTURAL LANDS IN CHALLIS UNIT.

feeding of livestock. Yields are only fair due to the short growing season and gravelly soils. Livestock usually graze the crop residue and regrowth after the hay crop is harvested. Irrigation is required from May through September, a period of about 150 days.

FOREST MANAGEMENT

There are approximately 7,100 acres of forested land in the Challis Planning Unit available for commercial timber production. This constitutes about 19.5% of the total forested area in the unit. Seven hundred acres have been harvested to some extent over the past 20 years, and are currently under a mid-level intensive forest management program.

The bulk of the unit's forested area, 29,250 acres, is considered unavailable for either commercial production or, more particularly, intensive management. These areas have been categorized as protection areas for various reasons, including rugged topography, limited water supply, and short growing season, in addition to their importance as watersheds, wildlife habitat areas, and scenic backgrounds. Under the protective management category, these stands would remain in their natural state unless disturbed by some catastrophic event such as fire or severe insect or disease infestation.

The forest management goal in the unit is management of 7,100 acres of commercial forest land. In practice, this would involve conversion of overmature, decadent stands which are producing little or no timber volume, to vigorous, young stands capable of producing high, sustained-yield volumes. This management is occurring to an extent on much of the 700 acres that have previously been logged. Regeneration on most of the areas is more than adequate, and the residual trees that were not harvested have responded markedly well to the reduction in competition. A good example is a site in the Bruno Creek drainage where logging took place twelve years ago. In the past eleven years, one residual tree

sampled had added over two inches to its diameter; it had taken at least 50 or more years for this much growth under the competitive stress that existed prior to logging. This type of response is not uncommon on good sites in the unit (Vitolins, 1975).

The current, individual tree harvesting method has proven most successful in the unit. Trees to be harvested are individually marked for cutting, based on age, vigor, form, and spacing. Openings created by cutting selected individual trees are sufficient to permit regeneration and release residual trees, while maintaining the "green canopy" appearance of the forested lands in the unit. This harvesting method will continue to be used in the Challis Unit.

Douglas-fir is the predominant commercial species, but some lodgepole pine is also available. Other species such as Englemann spruce and limber pine are sometimes found in association with these species but are of little commercial importance. There is only one small sawmill within the unit boundaries. Its annual capacity is about 400 thousand board feet. This mill depends primarily on NRL for its logs. Other users include larger mills located in Salmon, Arco, and Mackay.

The average standing volume of mature commercial stands is about 20 thousand board feet per acre and the annual productive capacity (allowable cut) is calculated at 354 thousand board feet. Over the past 20 years, about 6.5 million board feet have been disposed of, which averages about 326 thousand board feet annually, and is within 8% of the calculated allowable cut. This would indicate that the present harvesting practices in the unit are being properly applied and a continuous flow of raw material should continue at the present rate.

CULTURAL RESOURCES

Identification

Cultural resources are defined as those nonrenewable, fragile, and finite remains of human activity, occupation, and endeavor as reflected in districts, sites, structures, artifacts, objects, ruins, works of art, and architecture or documentation that are located on national resource lands (NRL). In general, cultural resources are usually thought of in terms of prehistoric and historic values. However, in broader terms, cultural resources represent a continuum of human values extending from the earliest human events to the most recent.

All of the cultural resources thus far identified in the Challis Planning Unit are prehistoric and historic sites. Briefly, a site can be defined as any locus where traces of human activity are found (Plog Hill, 1973).

The following procedures were employed to identify cultural resources within the Challis Unit:

A comprehensive literature search of historical, archaeological, and ethnographic sources (see Bibliography)

Consultation with individuals knowledgeable of the cultural resources in the unit (see Chapter 9)

A search of the Idaho State University Site Survey File

A field inventory by Idaho State University

Until the onset of this environmental impact statement (EIS), very little was known of the quantity or quality of cultural resources in the Challis Unit. Since the area was so poorly known, the literature contained little information on specific cultural resources in the unit.

Therefore, data provided by field work became crucial. The following discussion is a general chronology of cultural resource studies in the Challis Unit.

In 1958, Idaho State University carried out a very broad, non-random archaeological site survey across central and northern Idaho (Swanson, et al., 1959). This survey identified eight prehistoric archaeological sites in the Challis Unit.

In 1966, Idaho State University conducted a very broad, non-random archaeological site survey of the Salmon District (Swanson, et al. 1969). This survey identified 74 prehistoric archaeological sites in the unit.

The first professional archaeological excavation in the unit was carried out by B. Robert Butler (1971) of Idaho State University in 1970. Butler excavated what is now known as the Challis Bison Jump. Thus far, this site is the only cultural site in the unit on the National Register of Historic Places (FIGURE 2-54).

In 1973 and 1974, Max Dahlstrom and Marion McDaniel, archaeology students at Idaho State University, under the direction of B. Robert Butler, conducted archaeological studies near Antelope Flat within the unit. Twenty prehistoric archaeological sites were recorded as a result of this research.

In 1974, B. Robert Butler excavated a small, prehistoric campsite adjacent to the Challis Bison Jump. This was only the second professional archaeological excavation undertaken in the unit.

FIGURE 2-54 THE CHALLIS BISON JUMP. This site is on the National Register of Historic Places. Bison were driven over this cliff as a method of harvest.

Also, in 1974, archaeologists George Ruebelmann and Joseph Moore conducted a cultural resource inventory in conjunction with the Tuscarora Mining Corporation environmental impact study (Pavesic, 1974). As a result of this work, four prehistoric sites were recorded in the unit.

In 1975, Idaho State University conducted a major inventory of the unit's cultural resources. This is by far the most significant research to date.

Two fundamentally different approaches were employed in the 1975 cultural resource inventory. First, a stratified, systematic, unaligned sample was made of randomly selected portions of each AMP. Second, three different non-random methods were utilized to inventory NRL believed to contain cultural resources. The combined results of these two approaches have not only produced a significant increase in the cultural site data base but will also permit the creation of probability models

which will facilitate better management of all cultural resources in the unit. (APPENDIX 2-L contains a more detailed statement of the objective and rationale of the inventory research design.)

Evaluation

All cultural resources under the jurisdiction or control of the BLM or adjacent to NRL have some degree of significance, and therefore, merit consideration in the BLM management and planning systems. However, not all cultural resource sites are of equal value, nor do they all merit National Register listing.

It is recognized that the evaluation of cultural resources is an inherently subjective process. Professional judgment, therefore, must be an explicit and essential element of the process. This means that accurate evaluations must be made by trained specialists such as archaeologists or historians. In addition, evaluations made by these specialists must be based on a consideration of all available cultural resource data.

Evaluation of cultural sites in the Challis Unit was based almost exclusively on observation of surface debris and features. While this procedure lacks the scientific rigor commonly associated with archaeological site evaluation in Idaho (i.e., subsurface testing), the BLM feels that it is adequate to determine if sites meet National Register criteria. In general, six criteria were employed in evaluating the cultural sites in the unit:

(1) Uniqueness of the site

(2) Uniqueness of location

(3) Quality of cultural material

(4) Quantity of cultural material

(5) Depth of deposit

(6) Degree of preservation

To date, there are 259 known cultural sites on NRL in the Challis Unit. Of these, 50 are considered National Register quality.

TABLE 2-37 lists the factors adversely affecting the known, non-renewable cultural resources of the unit. The degree of impact is expressed as a percentage of destruction.

Human Occupation and Use Summary

About 12,500 years ago, a series of subdivisions of the Big Game Hunting stage spread through North America. These subdivisions are formally known as the Clovis, Folsom, and Plano archaeological cultures. Projectile points characteristic of the Folsom and Plano cultures have been found on the surface within the unit, indicating at least 11,000 years of human occupation. Between 7,000 and 7,800 years ago, the Bitterroot culture emerged and has been suggested as the archaeological expression of the historic Northern Shoshoni.

The unit was occupied in an overlapping fashion by foot Shoshoni known as tukudeka'a (mountain sheepeaters), and after the early 1700s by various groups of horse-mounted Shoshoni. This marked the introduction of domestic horses into the area. These people maintained a simple lifestyle of hunting, fishing, and gathering.

TABLE 2-37

EXISTING FACTORS AFFECTING CULTURAL RESOURCES IN THE CHALLIS UNIT

Proposed Allotment	No. of Sites	Trampling 1/	Erosion 2/	Project/ Activities	Vandalism	Geologic Erosion	Undisturbed
Red Lake	28	16	11	13	2	6	3
Herd Creek	18	12	8	3	1	7	2
Road Creek	6	2	1	3	2		1
Bruno Creek	2						2
Round Valley	6	4	3	4	1		1
San Felipe-Peck Canyon	14	12	12	6			1
Warm Springs	88	68	68	13	5	4	8
N. Garden Creek	3	1					3
S. Garden Creek	6	1	2	1			3
Bald Mtn.	31	10	10	8	6	8	7
Thompson Creek	3	2	1	1		1	1
Split Hoof	16	8	7	1		2	7
Squaw Creek	1			1		1	
Spud Creek	18	11	11	8	4	1	4
Pine Creek	1	1	1				
East Fork	13	7	6	3	1		4
Sullivan Creek	2	1	1			1	1
Malm Gulch Frail Lands	3	1				1	1
TOTAL	259	156	141	65	22	32	49
Percent of Total 3/		60.2%	54.4%	25.1%	8.5%	12.4%	18.9%

1/ Trampling by domestic livestock

2/ Accelerated erosion as a secondary effect of trampling or overgrazing.

3/ Some cultural resource sites are being damaged by multiple factors.

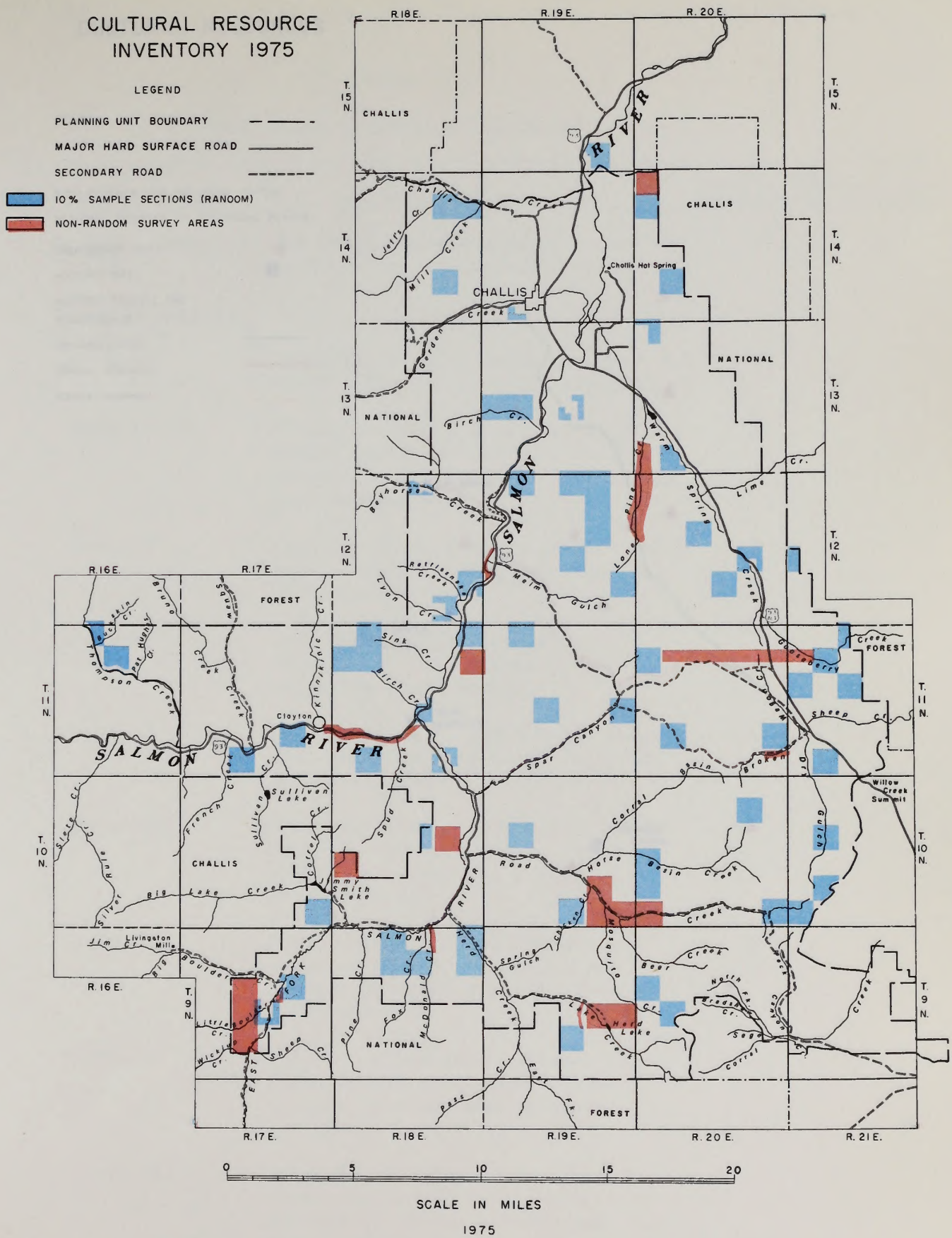
The first Euro-Americans to explore the area now known as the Challis Planning Unit were a Hudson Bay Company fur trapping brigade led by Michael Bourdon in 1822. In the mid-1860s, gold was discovered in the Salmon River region and thousands of miners poured into the area. Towns to supply the various mining region soon were being founded, including Clayton, Crystal, Bayhorse, and Challis in the unit (MAP 2-24). As the population of the mining districts increased in 1877, 1878, and 1879, small farms and ranches appeared in the surrounding valleys to supply the need for fresh produce and meat. This marked the introduction of domestic livestock into the unit. Freight and stage roads were established to make even more freightable items available to the mining districts (MAP 2-25).

This expansion by the white intruders finally resulted in the Sheepeater War of 1879, and the Indians were forced onto reservations.

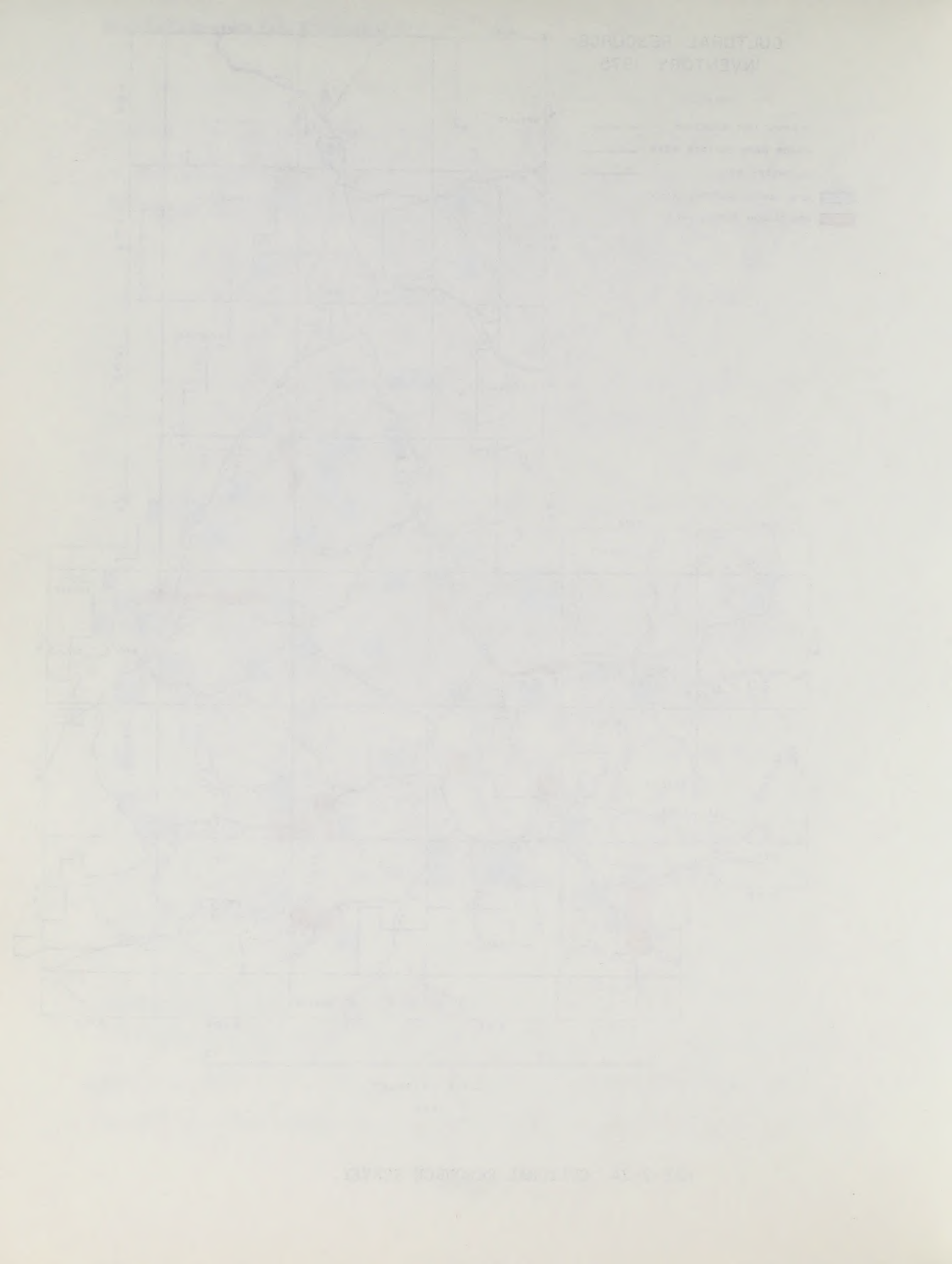
Custer County was created in 1881, and Challis was elected county seat. By the late 1890s and early 1900s, the mines began to fade and the discouraged miners gradually began to move out or acquire farms and ranches in the surrounding valleys. Challis became a ranching/farming-oriented community and survived the fate of many mining-oriented towns. (APPENDIX 2-J contains a more detailed account of human occupation and use of the Challis Unit).

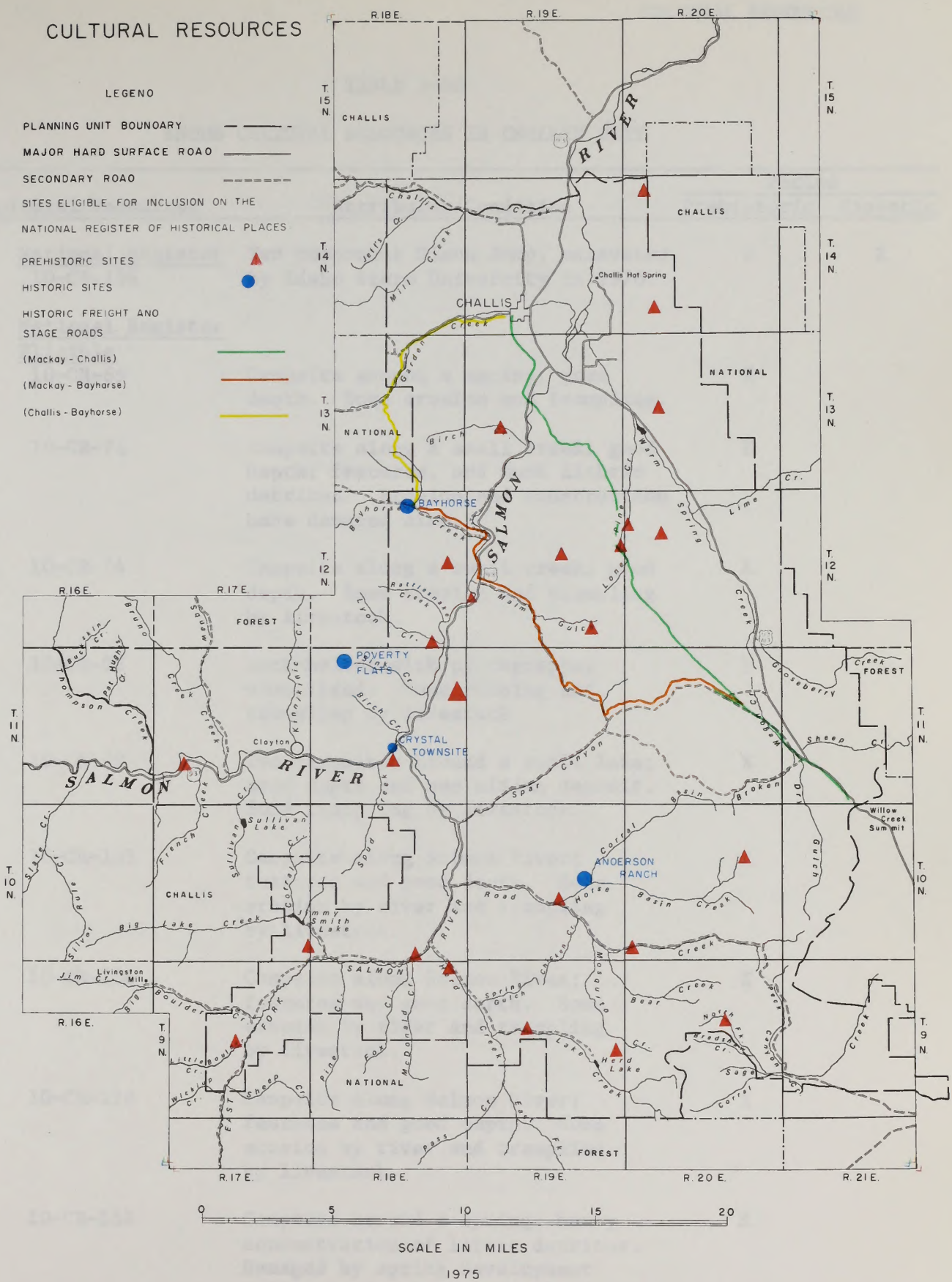
Summary of Known Cultural Resources

TABLE 2-38 contains a brief description of the known cultural sites within the unit. All 259 sites discussed are on NRL administered by the BLM, with the exception of those noted at the end of the table.



MAP 2-24 CULTURAL RESOURCE SURVEY.





MAP 2-25 LOCATION OF ELIGIBLE SITES FOR INCLUSION ON THE NATIONAL REGISTER OF HISTORIC PLACES.

TABLE 2-38

KNOWN CULTURAL RESOURCES IN CHALLIS UNIT

Cultural Resources	Attributes/Condition	Period	
		Prehistoric	Historic
A. National Register			
10-CR-196	Two component Bison Jump, excavated by Idaho State University in 1970.	X	X
B. National Register Eligible			
10-CR-69	Campsite around a spring; good depth. Some erosion and trampling.	X	
10-CR-71	Campsite along a small creek; good depth; features, and much lithric detritus. Erosion and construction have damaged site.	X	
10-CR-74	Campsite along a small creek; good depth. Some erosion and trampling by livestock.	X	
10-CR-92	Rockshelter with pictographs; vandalized. Some rubbing and trampling by livestock.	X	
10-CR-98	Two campsites around a small lake; good depth and one midden deposit. Some trampling by livestock.	X	
10-CR-103	Campsite along Salmon River; features and good depth. Some erosion by river and trampling by livestock.	X	
10-CR-106	Campsite along Salmon River; features and good depth. Some erosion by river and trampling by livestock.	X	
10-CR-118	Campsite along Salmon River; features and good depth. Some erosion by river and trampling by livestock.	X	
10-CR-152	Campsite around a spring; heavy concentration of lithic detritus. Damaged by spring development and trampling by livestock.	X	

TABLE 2-38 (cont.)

KNOWN CULTURAL RESOURCES IN CHALLIS UNIT

Cultural Resources	Attributes/Condition	Period	
		Prehistoric	Historic
10-CR-176	Campsite near confluence of two small streams; good depth and concentration of lithic tools. Some trampling by livestock.	X	
10-CR-282	Campsite along a small stream; good depth and heavy concentration of lithic detritus and tools. Damaged by erosion and trampling by livestock.	X	
10-CR-339	Campsite along a small spring; good depth and heavy concentration of lithic detritus and tools. Slight trampling by livestock.	X	
10-CR-515	Campsite around a spring; some depth and heavy concentration of lithic detritus and tools. Some damage by development and livestock trampling.	X	
10-CR-344	Campsite around a spring; good depth and features. Some trampling by livestock.	X	
10-CR-358	House structures, quarry/workshop, heavy concentration of lithic detritus. Some trampling of site around a small spring.	X	
10-CR-359 10-CR-414 10-CR-450 10-CR-451 10-CR-513	A series of eight talus hunting blinds and one small concentration of lithic detritus, all located around a marshy spring.	X X X X	
10-CR-361	Campsite along a small creek; good depth, features, scattered lithic detritus and tools. Damaged by livestock trampling, road construction and erosion.	X	

TABLE 2-38 (cont.)

KNOWN CULTURAL RESOURCES IN CHALLIS UNIT

Cultural Resources	Attributes/Condition	Period	
		Prehistoric	Historic
10-CR-363	Campsite along a small stream; good depth and features. Slight vandalism and trampling by livestock.	X	
10-CR-409 10-CR-410 10-CR-411 10-CR-412 10-CR-425	A series of 27 talus hunting blinds near the mouth of a small canyon.	X X X X X	
10-CR-427 10-CR-428 10-CR-429 10-CR-430	Small freighting town of Crystal of the late 1870s and early 1880s. Stone foundations are all that remain. Some vandalism and trampling by livestock.		X X X X
10-CR-423 10-CR-424 10-CR-455	Poverty Flat mining area of the 1880s. Four log cabins and the remains of the Silver Bell mine. Some vandalism.		X X X
10-CR-435	Campsite along a creek; some depth, features, extensive area of lithic detritus and tools. Damaged by road construction, trampling by livestock, and erosion.	X	
10-CR-437	High concentration of lithic detritus and associated talus hunting blind near creek. Road goes through site and trampling by livestock.	X	
10-CR-439	Campsite and historic homestead around a small spring. Prehistoric campsite disturbed by historic activity; trampling by livestock and erosion continuing.	X	X
10-CR-456	Campsite along Salmon River; good depth, features, shell middens and lithic detritus. Road goes through site which is subjected to trampling by livestock.	X	

TABLE 2-38 (cont.)

KNOWN CULTURAL RESOURCES IN CHALLIS UNIT

Cultural Resources	Attributes/Condition	Period	
		Prehistoric	Historic
10-CR-463	Campsite along Salmon River; good depth, features, lithic detritus. Some trampling by livestock and erosion.	X	
10-CR-467 1/	Campsite around a small spring; good depth, lithic detritus and tools. Some trampling by livestock and erosion.	X	
10-CR-485	Rockshelter near creek; deep deposit with smoke stained roof.	X	
10-CR-497	Coke ovens used in early day ore reduction process at Bayhorse; ca. 1880s. In various stages of deterioration.		X
Bayhorse 2/	Early day mining town; ca. 1880 to 1925. Approximately 50% of the buildings still standing.		
10-CR-499	Campsite with possible semi-subterranean house depressions, possible burials on nearby talus slope and extensive lithic scatter. Some trampling by livestock.	X	
10-CR-506	Campsite around a spring; good depth and extensive concentration of lithic detritus and tools. Damaged by spring development and trampling by livestock.	X	
Anderson Ranch	Log ranch house in good condition, log barn collapsed. No date.	X	
Challis-Mackay freight/stage rd. Challis-Bayhorse freight/stage rd. Bayhorse-Mackay freight/stage rd.	Sections of these early mining period freight and stage roads are in fair to good condition. These sections should be preserved/protected from grading and extensive vehicular use.	X	

TABLE 2-38 (cont.)

KNOWN CULTURAL RESOURCES IN CHALLIS UNIT

Cultural Resources	Attributes/Condition	Period	
		Prehistoric	Historic
C. Non-National Register Eligible 210 3/	Campsites, rockshelters, caves, talus hunting blinds, and lithic scatters with little or no depth. Many are extensively damaged.	X	
Penal cabin	Log homestead in good condition; no date.		X

1/ State property.

2/ Private property.

3/ Federal, state and private property; of these, 21 sites are on private property, and 5 are partly on private property and partly on Federal or State property.

Summary of Unknown Cultural Resources

Based upon the combined results of the 1975 random and non-random surveys, it is estimated that 1,000 prehistoric and historic sites presently exist in the unit. Of these, approximately one-third are known while two-thirds remain unknown.

In general, most of the known 259 sites in the unit appear to be related to water. In addition, based on current levels of knowledge, most water-related sites appear to have more significant attributes than nonwater-related sites. In terms of National Register values, therefore, it is assumed that unknown, water-related sites, in general, will be more significant than nonwater-related sites.

SOCIO-ECONOMIC CONDITIONS

The economy of Challis and Custer County is based largely upon agriculture, retail trade, tourism, and governmental activity. Custer County ranks third in area, but only 37th in population of 44 Idaho counties. Challis, the largest town (FIGURE 2-55) and county seat, is distant from Idaho's major population centers and major transportation systems. All of Custer County is considered rural, and population density is low.

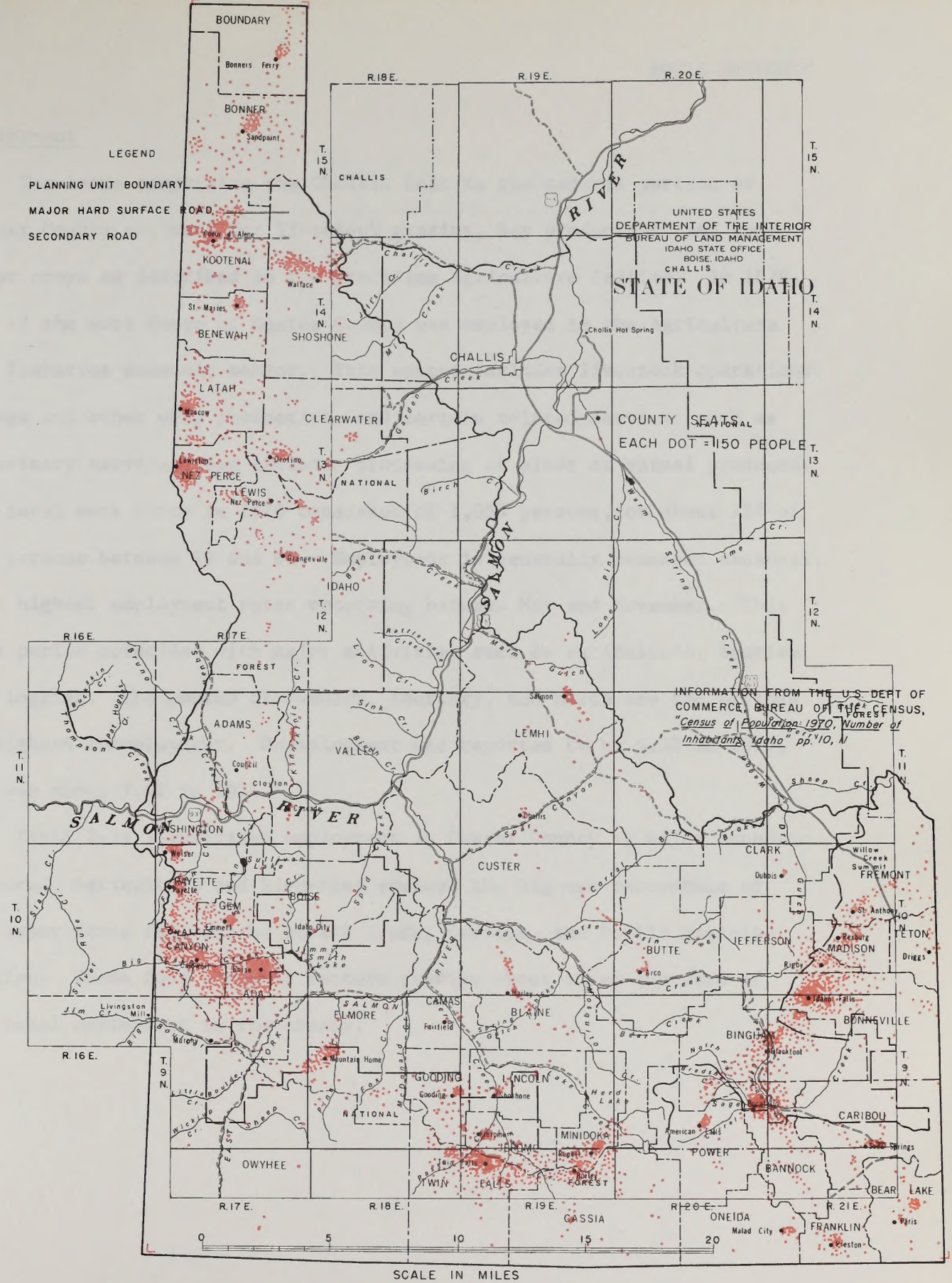
FIGURE 2-55 CITY OF CHALLIS

Population

Custer County had a 1970 population of 2,967 and an estimated 3,035 persons in 1973. Challis had a 1970 population of 784 and an estimated 850 persons in 1973. About 27% of Custer County residents live in the town of Challis.

Custer County is considered totally rural in nature. About 78% of the residents are classified as "rural nonfarm," and 22% as "rural farm" by Bureau of Census definition, "Occupied housing units are classified as farm units if they are located on places of ten or more acres from which sales of farm products amounted to $50 or more in 1969, or on places of less than ten acres from which sales of farm products amounted to $250 or more in 1969." The population density in Custer County was .6 persons per square mile in 1970. (MAP 2-26 shows Idaho's population distribution.) However, the county's population density would be 9.5 persons per square mile if only the square miles of private lands within the county are considered. Population within the Challis Unit, including the towns of Challis and Clayton, is estimated to be about 1,500 persons.

Over 99% of Custer County residents are white, and American Indians make up almost all of the remaining 1%. There appear to be no other significant differences between the county's population characteristics, such as median age, age distribution, sex, etc., and those for the state as a whole.



MAP 2-26 STATE OF IDAHO POPULATION DENSITY

Employment

The lands comprising the Challis Unit in the central portion of Custer County are used for livestock grazing, hay production, and some other crops as described in the preceding Agriculture Section. In 1970, 35% of the work force of Custer County was employed in the Agriculture and Fisheries economic sector. This sector includes livestock operations, forage and other crop production, and certain related services such as veterinary services, but excludes processing of plant or animal products. The total work force in 1970 consisted of 1,033 persons, or about 71% of the persons between 16 and 64. Employment is generally somewhat seasonal, with highest employment rates occurring between May and November. This time period coincides with major activities such as agriculture, tourism, and logging. The months of January, February, and March are the periods of highest unemployment. Unemployment was reported to be 9.3% in 1970, but was about 7.4% in 1974.

TABLE 2-39 illustrates employment in Custer County by major economic sectors. Agriculture and Fisheries employs the highest percentage of the labor force followed by Retail Trade, Service, and Public Administration. These four economic sectors provide about three-quarters of the total employment in the county.

TABLE 2-39

EMPLOYMENT BY MAJOR ECONOMIC SECTIONS BY COUNTY, REGION, AND STATE 1970 1/

Economic Sector	Custer	Idaho
Agriculture & Fisheries	358	33,406
%	35%	13%
Mining	57	3,869
%	6%	2%
Construction	50	16,628
%	5%	6%
Manufacturing	21	37,827
%	2%	15%
Transportation & Communications	18	13,901
%	2%	5%
Utilities	33	4,578
%	3%	2%
Wholesale Trade	25	11,650
%	2%	4%
Retail Trade	192	46,812
%	18%	18%
Finance, Insurance & Real Estate	22	9,880
%	2%	4%
Service	101	35,346
%	10%	14%
Public Education	54	22,479
%	5%	9%
Public Administration	102	21,075
%	10%	8%
TOTAL	1,033	257,451

1/ U.S. Census, General Social and Economic Characteristics, 1970, January 1972.

Personal Income

Personal income includes wages, salaries, property income, and transfer payments (such as old age pensions, unemployment compensation, and social security). Custer County per capita personal income was $4,738 in 1973, which is about 85% of the state average. Although total personal income increased over 600% between 1940 and 1973, it decreased as a percentage of the state and national totals (TABLE 2-40).

Income distribution among families in Custer County is illustrated in TABLE 2-41. About 29% of families had incomes over $10,000 in 1970, with 37% between $10,000 and $5,000, and 34% below $5,000 annually.

TABLE 2-40

PERSONAL INCOME DATA 1/

Total Personal Income (Millions of Dollars)	1940	1950	1960	1970	1973
Custer County	1.6	4.1	4.7	7.6	11.4
% of National Total	.0021	.0018	.0012	.0009	.0011
Idaho	224.5	764.2	1,224.1	2,361.5	3,398.2
% of National Total	.3010	.3384	.3190	.2922	.3212
Per Capita Personal Income (Dollars)					
Custer County	473	1,239	1,607	2,536	3,738
% of National Average	80%	83%	74%	64%	63%
Idaho	450	1,295	1,863	3,289	4,381
% of National Average	76%	87%	86%	83%	87%

1/ Bureau of Economic Analysis Report, April, 1975.

TABLE 2-41

INCOMES OF CUSTER COUNTY FAMILIES AND UNRELATED INDIVIDUALS 1970 [1/]

All Families	790
Less than $1,000	12
$1,000 to $1,999	51
$2,000 to $2,999	69
$3,000 to $3,999	86
$4,000 to $4,999	52
$5,000 to $5,999	72
$6,000 to $6,999	48
$7,000 to $7,999	80
$8,000 to $8,999	73
$9,000 to $9,999	18
$10,000 to $11,999	62
$12,000 to $14,999	90
$15,000 to $24,999	62
$25,000 to $49,000	15
$50,000 or more	--
Median Income	$7,063
Mean Income	$7,923
Families with Female Head	52
Mean Income	$5,072
All Families & Unrelated Individuals	978
Median Income	$5,718
Mean Income	$6,952
All Unrelated Individuals	188
Median Income	$1,841
Mean Income	$2,870
Female Unrelated Individuals	99
Mean Income	$2,129

1/ U.S. Census, General Social and Economic Characteristics, PC (1)-C14 Idaho, January 1972.

According to the 1970 census, 16% of Custer County families were considered to have incomes below the county poverty level as determined by the Bureau of Census. With a mean income of $1,969 in this category, $1,179 would be required to raise the average family above this level. For comparison, the 1970 census showed 10.8% of all Idaho families had incomes below the poverty level.

Sources of family incomes are shown in TABLE 2-42. Wages and salaries provide income for most of the families in the county and provide the highest average income of the several kinds of income. Other important sources of income are "farm and nonfarm self-employed." These sources of income are directly related to employment in the economic sectors outlined earlier.

TABLE 2-42

SOURCE OF CUSTER COUNTY FAMILY INCOMES 1970 [1/]

	Custer
ALL FAMILIES	790
With Wage or Salary Income	606
Mean Income	$6,125
With Nonfarm Self-employed Income	219
Mean Income	$5,339
With Farm Self-employed Income	167
Mean Income	$4,101

1/ U.S. Census, General Social and Economic Characteristics, PC(1)-C14 Idaho, January 1972.

Industrial Incomes

In 1973, industry earnings amounted to $8,475,000 in Custer County as reported by the Bureau of Economic Analysis. This sum represents about 75% of total personal income. The balance is from property income and transfer payments. Industry earnings are made up of wages, salaries, and proprietors' income. Earnings by major economic sectors for 1973 are shown in TABLE 2-43 and FIGURE 2-56.

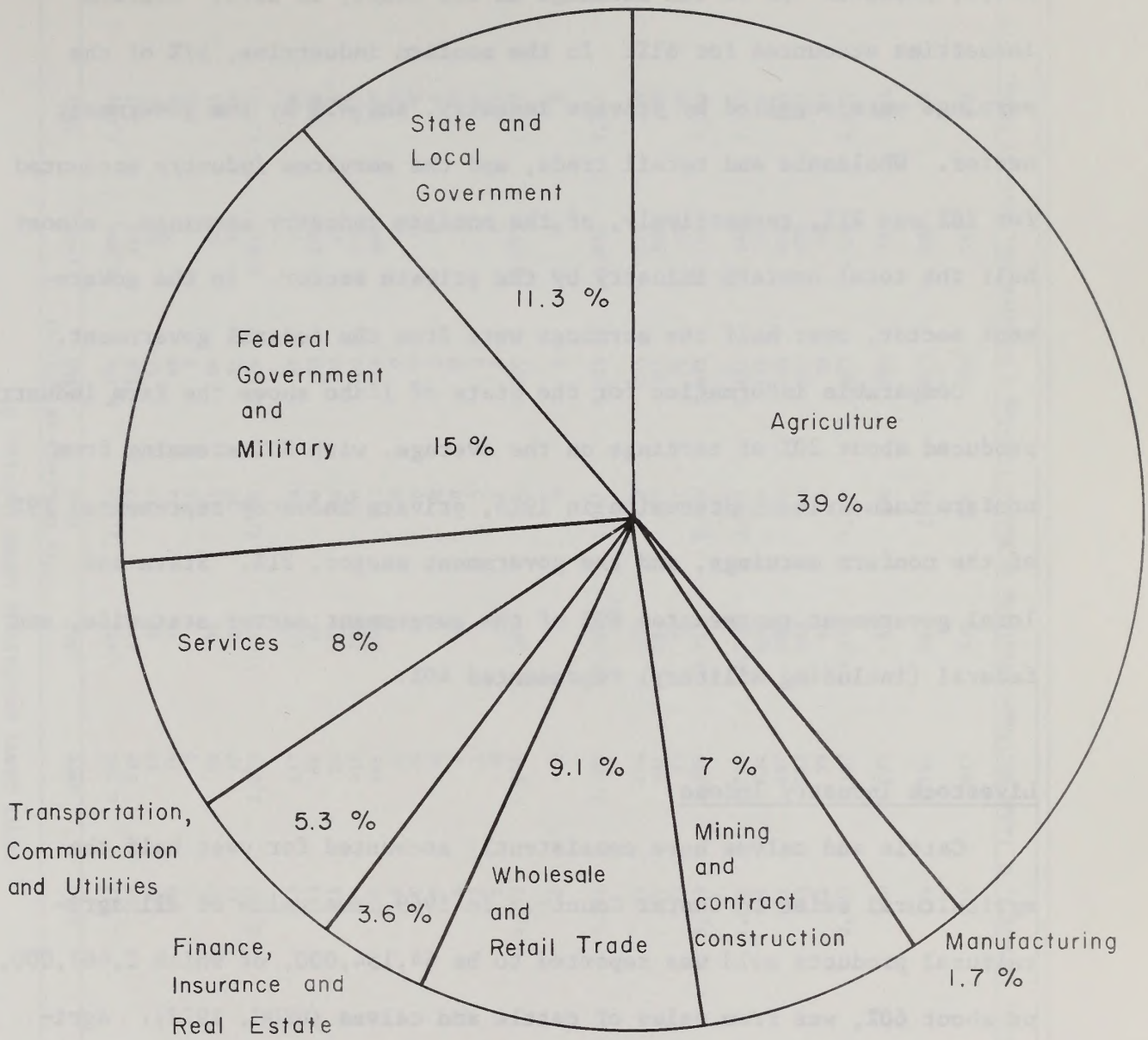
TABLE 2-43

EARNINGS BY MAJOR ECONOMIC SECTOR 1973 [1/]

	Custer County	Idaho
	(Thousands of Dollars)	
Total Labor & Proprietor's Earnings	8,476	2,756,144
By Industry		
Farm	3,308	560,465
Nonfarm	5,168	2,195,679
Private	2,943	1,731,197
Manufacturing	146	441,097
Mining	(D) [2/]	33,926
Contract Construction	(D)	192,571
Wholesale & Retail Trade	770	432,614
Finance, Insurance & Real Estate	306	101,311
Transportation, Communications & Public Utilities	450	179,054
Services	609	337,802
Other Industries	68	12,822
Government	2,225	464,482
Federal Civilian	1,209	119,985
Federal, Military	59	67,585
State and Local	957	276,912

1/ Center for Business and Economic Research. Data Supplied on computer tape by Bureau of Economic Analysis, Washington, D.C.

2/ Not shown to avoid disclosure of confidential information.



From the Center for Business and Economic Research, data supplied on computer tape by Bureau of Economic Analysis, Washington, D. C.

FIGURE 2-56 CUSTER COUNTY EARNINGS BY MAJOR ECONOMIC SECTOR 1973

The farm industry, which includes livestock, forage, and cash crops, produced 39% of all earnings in the county in 1973. Nonfarm industries accounted for 61%. In the nonfarm industries, 57% of the earnings were supplied by private industry, and 43% by the government sector. Wholesale and retail trade, and the services industry accounted for 26% and 21%, respectively, of the nonfarm industry earnings - almost half the total nonfarm industry by the private sector. In the government sector, over half the earnings were from the federal government.

Comparable information for the State of Idaho shows the farm industry produced about 20% of earnings on the average, with 80% stemming from nonfarm industries. Statewide in 1973, private industry represented 79% of the nonfarm earnings, and the government sector, 21%. State and local government represented 60% of the government sector statewide, and federal (including military) represented 40%.

Livestock Industry Income

Cattle and calves have consistently accounted for over half the agricultural sales in Custer County. In 1969, the value of all agricultural products sold was reported to be $4,154,000, of which 2,467,000, or about 60%, was from sales of cattle and calves (USDC, 1972). Agricultural income data for 1972 (Bollinger, 1975), showed cattle and calves accounted for 85% of income from livestock products and 61% of cash receipts from all agricultural commodities (TABLE 2-44).

TABLE 2-44

CUSTER COUNTY AGRICULTURAL INCOME 1965-1972 [1/]

Source	(In thousands of dollars) 1965	1966	1967	1968	1969	1970	1971	1972
Cattle and calves	1,717	1,778	1,452	1,537	1,574	1,890	2,036	2,775
Sheep	257	238	234	270	326	293	277	247
Hogs	74	75	59	53	54	54	51	62
Dairy products	70	76	74	72	69	77	84	92
Poultry and eggs	5	5	3	2	2	2	2	1
Wool	53	64	39	51	64	64	41	60
Other Livestock	32	37	32	35	35	31	33	39
Livestock products	2,208	2,273	1,893	2,000	2,124	2,411	2,524	3,276
Wheat	123	117	116	79	97	77	70	61
Barley	143	84	88	90	83	121	180	191
Other grain	26	20	20	24	30	41	34	28
Hay	304	416	296	290	403	378	462	517
Potatoes	490	469	400	473	684	602	494	411
Dry beans	0	0	0	0	0	0	0	0
Dry peas	0	0	0	0	0	0	0	0
Other vegetables	0	0	0	0	0	0	0	0
Sugar beets	4	0	0	0	0	0	0	0
Seedcrops	1	1	3	3	3	3	3	1
Other crops	2	0	4	2	0	1	17	28
Total crops	1,093	1,107	927	961	1,300	1,223	1,260	1,237
Fruits and nuts	0	0	0	0	0	0	0	0
Cash receipts from all commodities	3,301	3,380	2,820	2,981	3,424	3,634	3,784	4,513
Goverment payments	93	174	125	113	205	159	219	274
Nonmoney income	297	281	291	297	311	326	355	382
Other farm income	22	23	27	29	31	30	36	37
Total realized farm income	3,713	3,858	3,263	3,420	3,971	4,149	4,394	5,206
Operating expenses	1,891	1,940	1,959	1,967	2,211	2,388	2,493	2,713
Depreciation and repairs	606	634	673	694	719	730	798	848
Taxes on farm property	181	187	200	203	193	207	224	232
Interest on mortgage debt	263	287	318	352	377	407	457	515
Net rent to nonfarm landlords	42	59	61	74	78	84	83	120
Total production expenses	2,983	3,107	3,211	3,290	3,578	3,816	4,055	4,428
Realized net farm income	730	751	52	130	393	333	339	778
Net change in farm inventories	194	(276)	384	(29)	245	180	45	22
Total net farm income	924	475	436	101	638	513	384	800

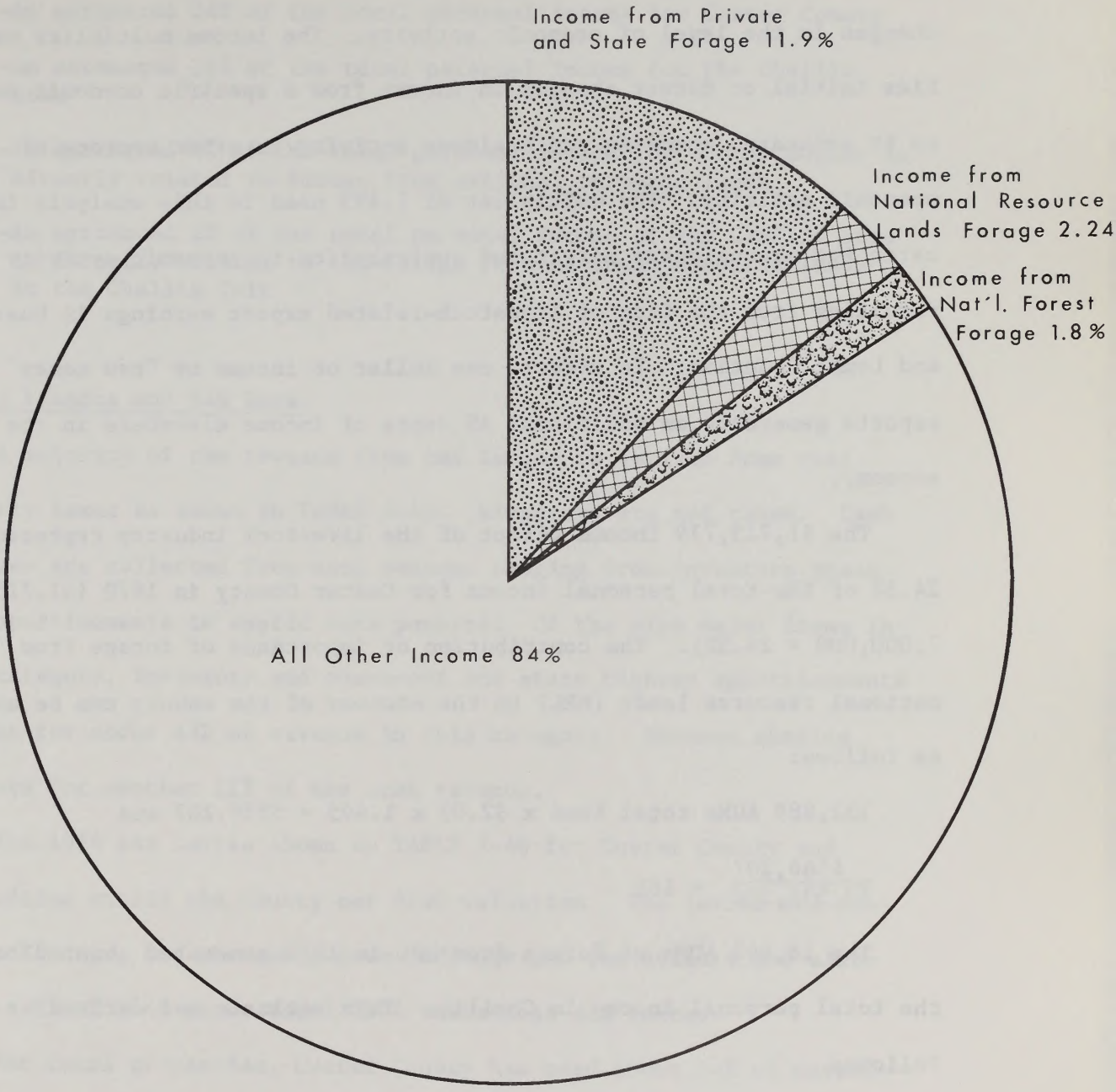
1/ Personal Income in Idaho Counties, 1965-1972, W. LaMar Bollinger, Division of Budget Planning & Coordination, State of Idaho, 1975.

The income effect attributable to the livestock industry in Custer County can be estimated by analyzing livestock earnings in relation to livestock forage or AUMs. "Earnings," as reported by the Bureau of Economic Analysis, U.S. Department of Commerce, are made up of wages and salaries, other labor income (such as commissions), and proprietor's income. As a rule, earnings account for 80% or more of total personal income and provide a very good measure of income derived from a specific economic activity.

Total livestock earnings in Custer and Lemhi Counties in 1970 were estimated to be $2,772,000. The total feed requirement for the 81,154 head of livestock in this region was 973,848 AUMs annually. Therefore, $2,772,000 ÷ 973,846 AUMs = $2.85 per AUM earnings. The income effect in Custer County attributable to the livestock industry is estimated by multiplying the total livestock feed requirement times the earnings per AUM times the multiplier = 402,694 AUMs x $2.35 x 1.495 = $1,715,779.

FIGURE 2-57 shows the livestock industry income from the Challis Unit in 1970.

CHALLIS UNIT
1970



Source: Estimated from Bureau of Census published reports and data from Bureau of Economic Analysis, 1972.

FIGURE 2-57 LIVESTOCK INDUSTRY INCOME

The term "multiplier effect" is used to describe the observed phenomenon that initial changes in spending result in overall larger changes in the level of economic activity. The income multiplier magnifies initial or direct changes in income from a specific economic sector as it generates spending and business activity in other sectors of economic activity. The multiplier of 1.495 used in this analysis indicates the expansionary effect and contribution to economic activity resulting from the flow of livestock-related export earnings in Custer and Lemhi Counties. In effect, one dollar of income or "new money" from exports generates an additional 49 cents of income elsewhere in the economy.

The $1,715,779 income effect of the livestock industry represented 24.5% of the total personal income for Custer County in 1970 ($1,715,779 7,000,000 = 24.5%). The contribution or importance of forage from national resource lands (NRL) to the economy of the county can be estimated as follows:

132,889 AUMs total feed x $2.85 x 1.495 = $556,207 and

$$\frac{\$566,207}{\$3,538,500} = 16\%$$

The 18,592 AUMs of forage from NRL in 1970 generated about 2% of the total personal income in Challis. This estimate was derived as follows:

18,592 AUMs x $2.85 x 1,495 = $79,215 and

$$\frac{\text{Income from NRL grazing } \$79,215}{\text{Total personal income in Challis } \$3,538,500} = 2.24\%$$

In summary, the livestock industry makes the following contribution to income:

- -An estimated 24% of the total personal income for Custer County
- -An estimated 16% of the total personal income for the Challis Area
- -An estimated 4% of the total personal income for Custer County is directly related to forage from national resource lands
- -An estimated 2% of the total personal income of the Challis area is directly related to the forage from national resource lands in the Challis Unit

Public Finance and Tax Base

A majority of the revenue from tax levies is derived from real property taxes as shown in TABLE 2-45. Livestock are not taxed. Cash revenues are collected from many sources ranging from inventory phase-out apportionments to septic tank permits. Of the nine major items in this category, inventory and phase-out and state highway apportionments account for about 43% of revenue in this category. Revenue sharing accounts for another 11% of the cash revenue.

The 1974 tax levies shown on TABLE 2-46 for Custer County and communities within the county per $100 valuation. The levies are subject to change, but the table does indicate how tax dollars are allocated. TABLE 2-47 shows total 1974 valuations and taxes.

For rural properties, Custer County has used about 14% of market value as the assessed valuation and a tax of about 7% on the average. For example, for a market value of $1,000, assessed value would be $140 ($1,000 x .14 = $140.00) and tax would be $9.80 ($140 x .07 = $9.80).

TABLE 2-45

CUSTER COUNTY REVENUE ($000) FROM ALL SOURCES 1973 1/

Revenue from Tax Levies	
1973 Real Taxes	$ 474.8
1973 Personal Taxes	27.5
Penalty Additions	.8
Total	501.1
% returned to State Fund	.4%
Cash Revenue	
Inventory Phase-Out	143.3
State Highway Apportionment	178.2
Motor Vehicle Licenses	36.4
Social Security Taxes	62.6
U.S. Forest Service Apportionment	30.5
Liquor Control Apportionment	21.7
Interest on Investments	36.1
Transfers	79.2
Revenue Sharing	88.1
Other	80.7
Total	756.8
% returned to State Fund	6.2%
Accounts Receivable	
1972 Current Taxes	100.7
1973 Current Taxes	318.6
Delinquent Taxes	45.0
Personal Taxes	31.0
Total	495.3
% returned to State Fund	.4%
Cash Accrual & Revenues	1,160.5
Accounts Receivable & Transfers	1,252.1

1/ 1973 Annual Financial Report for Custer County.

TABLE 2-46

CUSTER COUNTY TAX LEVIES PER $100.00 VALUATION 1974 1/

STATE:		
State Building Fund	.0073	
Water Pollution Control Fund	.0108	
		.0181
COUNTY:		
Current Expenses	1.3866	
County Poor	--	
Weed Control	.1000	
Airport	.0225	
Special Fair	.0873	
Pest Control	.0148	
Reappraisal	.1486	
Health	--	
County Schools	.3849	
		2.1447
SOLID WASTE DISPOSAL:		.0779
MACKAY FREE LIBRARY:		.1064
CITIES:		
Challis		3.2778
Mackay		2.6343
Stanley		.1393
CEMETARY DISTRICTS:		
Challis		.1226
Big Lost River		.1513
SCHOOL DISTRICTS		
#111-112		3.9952
#181		3.3931
#182		4.3382
LOST RIVER HIGHWAY DISTRICT:		.7986
Special Bridge		.1200
NORTH CUSTER FIRE PROTECTION DISTRICT:		.4000

1/ Custer County Overall Economic Development Plan, 1974-5.

TABLE 2-47

STATEMENT OF CUSTER COUNTY 1974 TAX ROLLS [1/]

Unit	Valuation	Tax
State Building Fund	6,619,428.00	482.52
State Water Pollution Control	6,619,428.00	713.97
County	6,619,428.00	141,769.79
Challis	725,796.00	23,790.16
Mackay	366,839.00	11,120.58
Stanley	223,687.00	311.59
Jt. School District #111	265,411.00	10,603.76
Jt. School District #181	3,614,850.00	145,542.25
Jt. School District #182	2,055,461.00	89,169.82
Challis Cemetery District	1,461,607.00	1,791.94
Big Lost River Cemetery District	1,772,791.00	2,660.39
Big Lost River Highway District	2,321,364.00	17,081.89
Big Lost River Special Bridge	2,307,006.00	2,635.57
Mackay Free Library	1,774,978.00	1,888.56
North Custer Fire Protection District	2,024,089.00	8,096.27
Solid Waste Disposal	6,557,793.00	4,734.06
Forest Protection		33.74
	Total	462,426.86

1/ Combined valuation of the town, real, personal and subsequent rolls.

Attitudes and Values

Two different sets of attitudes and values can be discerned: (1) the personal attitudes and values of the residents of Custer County and the Challis area, and (2) the attitudes and values held by persons and groups in other portions of the state and nation concerning the Challis area. These attitudes and values have been expressed in several ways including local meetings, oral communications, letters, comments concerning the development of management framework plan (BLM land use plan for the Challis Unit), news articles, a local public opinion survey by the City of Challis, and formation or involvement of organized groups. These personal attitudes have not been compared, analyzed, or weighed. The most relevant are simply listed in two categories: (1) Within Challis, and (2) About Challis.

Within Challis

-Ranching is a good way of life and livestock grazing is well suited to the character of lands in the Challis Unit.

-Ranching makes an important contribution to the local economy.

-Residents welcome some economic growth, but not through large scale industrial development or rapid population growth.

-Ranchers are conservative in their sociopolitical attitudes and place a high value on their attachment to and use of land.

-Residents place a high value on making their own decisions with a local governmental framework.

-Ranchers grazing livestock on NRL and National Forest Lands should retain flexibility in their operations.

-Livestock grazing is compatible with resident and migratory wildlife.

About Challis

-Livestock grazing is not compatible with some species of wildlife and big game - particularly Rocky Mountain bighorn sheep.

-Livestock grazing should be discontinued or significantly reduced in the Challis Unit.

-Livestock grazing contributes to erosion and degrades the fishery.

-Wild horses should be managed to maintain a viable, healthy herd in the Challis Unit.

-The range forage resource is deteriorating due to overgrazing by domestic livestock.

-Livestock grazing from NRL does not make a significant contribution to the national economy.

FUTURE ENVIRONMENT

The following sections describe the possible future environment of the Challis Planning Unit at the end of 15 years if the action proposed in Chapter 1 is not implemented. They deal exclusively with the environmental components described in the preceding Existing Environment which are expected to change in the future.

SOIL AND WATER RESOURCES

Based on current trends it is predicted that the sediment yield in 15 years would be as shown in TABLE 2-48.

TABLE 2-48

ESTIMATED WEIGHTED AVERAGE SEDIMENT YIELDS FOR SOIL ASSOCIATIONS WITHIN THE CHALLIS UNIT EXPRESSED AS TONS/SQUARE MILE/YEAR

Soil Association	Present Yield	Yield in 15 Years With No Change In Management
A	200	220
B	40	44
C	170	187
D	1200	1320
E	20	22

VEGETATION

The predicted general condition of the vegetation in the Challis Unit after fifteen years without the proposed action is shown on MAP 2-27. Predicted acres by vegetative condition class and AUMs production by vegetative type, condition class, and allotment are shown in TABLES 2-49 and 2-50.

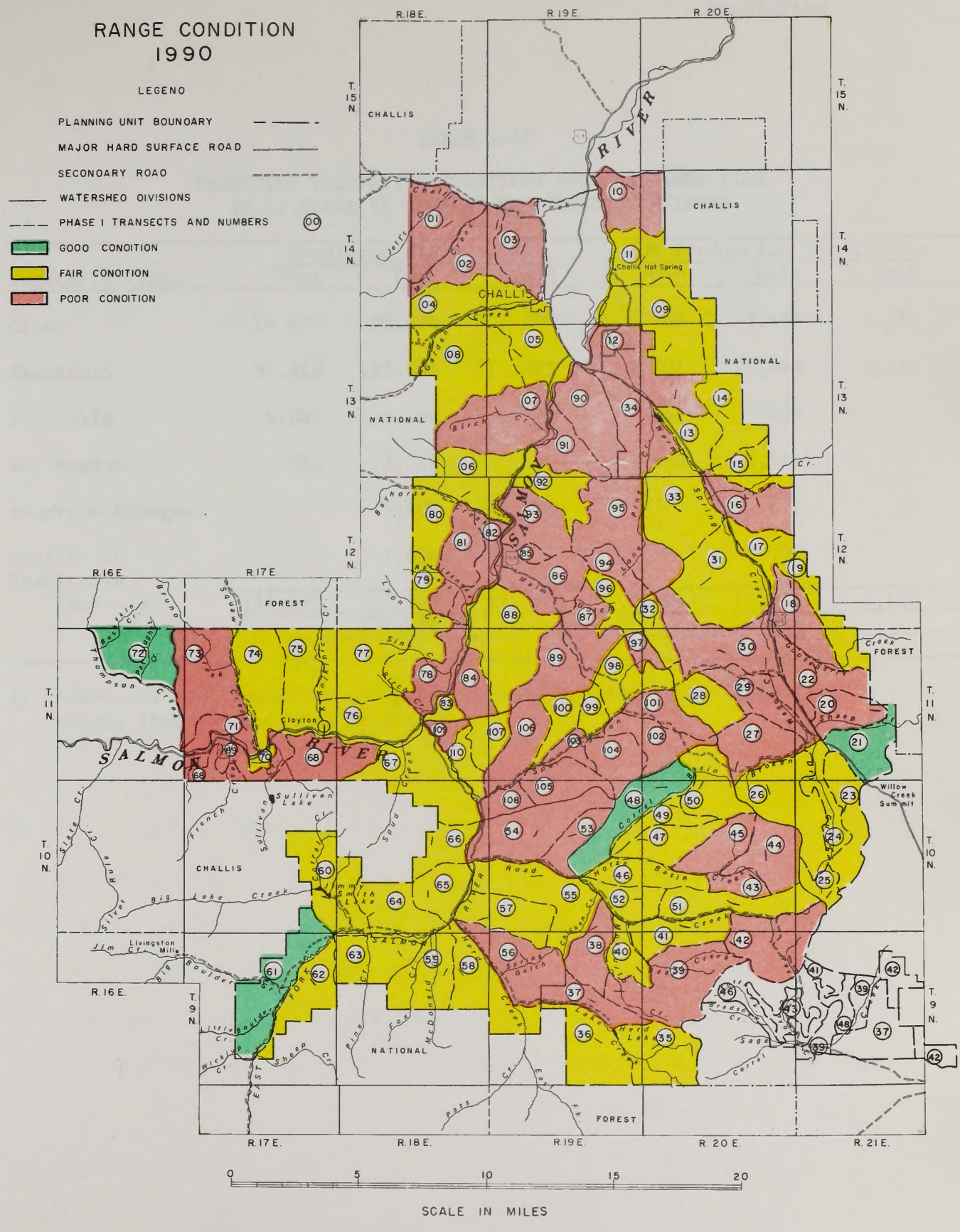
Without the proposed action there would be a decrease of 5,419 AUMs or a decline in total production of 18% after fifteen years.

The tables show there would be an increase in the poor condition class of 32,936 acres or 29%, a decrease of 26,610 acres in the fair condition class or 15%, and a decrease in the good condition class of 6,326 acres or 36%.

Predictions were based upon range trend studies conducted in the unit during 1975. It was assumed productive acres now in fair and good condition in a downward trend would decline one condition class. In addition, it was assumed AUM production now in the poor condition class, and the static and upward trends in the fair and good condition class, would either decrease or increase an estimated percentage in accordance with the following:

	CONDITION CLASS								
Vegetative 1/	Poor			Fair			Good		
Type	Down	Static	Upward	Down	Static	Upward	Down	Static	Upward
Grass	-15	- 3	+10	To	- 3	+10	To	- 3	+ 5
Sagebrush	-10	- 5	+ 7	Poor	- 5	+ 7	Fair	- 5	+ 4
Shadscale	- 5	- 2	+ 4	Condi-	- 5	+ 4	Condi-	- 3	+ 2
Wet Meadow	-15	- 2	+ 4	tion	- 3	+10	ition	- 3	+ 5
Mt. Mahogany	-10	-	+10	Class	-	+10	Class	-	+ 5

1/ Figures represent total percentage change in productivity that would occur after fifteen years.



MAP 2-27 PREDICTED VEGETATIVE CONDITION AFTER FIFTEEN YEARS WITHOUT THE PROPOSED ACTION.

TABLE 2-49

PREDICTED VEGETATIVE CONDITION AND AUM PRODUCTION
IN 15 YEARS IF PRESENT MANAGEMENT CONTINUES

Vegetative Type	Condition Class Acres			AUM Production for Classes		
	Poor	Fair	Good	Poor	Fair	Good
Grass	16,481	20,691	220	788	3,487	57
Sagebrush	92,315	115,555	11,075	2,707	11,866	3,111
Shadscale	5,081	9,180		169	209	
Wet Meadow	983	2,011		150	1,191	
Mountain Mahogany		3,408	80		676	12
Conifer 1/		7,000			400	
Unsuitable						
Subtotal	114,860	150,845	11,375	3,814	17,429	3,180
Total		277,080			24,423	

1/ Acres and AUM production estimated for the conifer type. This is a nonadd item not included in totals.

It is expected that with a continuation of the present grazing use, that the following vegetative changes would occur after fifteen years.

Sagebrush-Grass

The general aspect of the sagebrush-grass type would not change appreciably although it would be larger in size due to a continuation of the deterioration process. Vegetative composition changes would result in less desirable grasses, forbs, and shrubs, and increased amounts of sagebrush, rabbitbrush, and snakeweed. Changes in soil conditions or external factors such as fire might cause rabbitbrush or other plant species to become dominant in some areas.

Grass

The general grass type would decrease in size after fifteen years. It is expected some of the type would be invaded by sagebrush, rabbitbrush, phlox, and other annuals. This would occur first in the poa/annual association and later in portions of the stipa association.

Some areas will continue to remain in a stable condition as long as unavailability of water limits grazing use. As grazing capacity decreases, however, it is expected additional efforts would be made to haul or develop water in these locations. Eventually, these areas would also deteriorate and be invaded by sagebrush and other palatable and less desirable forage plants.

Shadscale

The shadscale vegetative type should not change appreciably in size or vegetative composition. Areas in a downward trend, however, would continue to lose desirable forage species such as Indian ricegrass and white sage. These plants would be replaced with less desirable plant species. Areas in a stable trend would probably remain in a stable condition for at least fifteen years but eventually trend downward as additional water were developed and the demand for forage increased.

Wet Meadow

The size of the wet meadows should not change appreciably after fifteen years; however, changes in vegetative composition would occur. Although the wet meadows appear to have a high degree of resistance to grazing, increased competition would result in the replacement of some desirable plants with less desirable plants. It would be expected other plants would be physically destroyed and lost through the trampling action of grazing animals.

Mountain Mahogany

With a continuation of the present grazing use, mahogany stands would be expected to maintain themselves, improve and increase slightly in acreage after fifteen years. Game populations and competitive demands, however, would be expected to fluctuate, and the vegetative condition and species composition would change correspondingly.

Conifer

The size or vegetative composition of the conifer type would not be expected to change appreciably in fifteen years.

Poisonous Plants

Under present management, death camas and water hemlock, two of the four poisonous plants which have been identified in the unit, have not shown a significant increase. Should the proposal not be implemented and present management continue, based on past patterns it is assumed that no significant increase in these species would occur. Larkspur and halogeton, conversely, have exhibited limited increases under the present situation.

Halogeton is presently a threat to cattle more because of its invading nature rather than through its poisoning quality. To date no increase in plant occurrence can be attributed to cattle grazing.

If the proposed action is not implemented, it is predicted that larkspur would increase around moist, shady areas, and halogeton would slowly encroach on severely disturbed areas, thereby increasing the seed source, which increases the possibility of further spread. Where this occurs, growing space is eliminated for desirable forage species.

Endangered or Threatened Plants

Data regarding the physiological and phenological characteristics of both wavyleafed thelopody and bessy pointvetch are scanty. Whether the plants are increasing or decreasing is unknown, but field observations indicate that the thelopody at least, is maintaining itself.

The future survival of thelopody will probably depend as much upon natural phenomena as upon those imposed by future livestock use. This is not to say that the plant's present habitat should not be protected where necessary, but rather that several of the sites where the plant was observed are either already protected or have such severe topographic characteristics that livestock could not use them. The plant should survive under current management practices.

The status of pointvetch and other species remains unknown, as none were observed. It is quite probable that they are thriving, and that their future is not threatened by the current management practices.

Predicted Future Trends After Fifteen Years

Without regulated grazing use in areas where the trend is downward, the trend would be expected to continue downward. The most desirable plants remaining would continue to be killed and replaced with less desirable plants. As this process continued, additional soil would be lost, and its capability to produce desirable and important plants further decreased.

In areas where the trend is stable, the trend would be expected to gradually become downward. As the condition and production capability of areas now in a downward trend continued to decline, less desirable forage would be produced. With continuation of the same kind and amount of grazing use, additional pressure would be placed on areas currently in stable condition. Important plants in these areas would also lose their vigor, ability to produce seed, establish seedlings, and maintain themselves. Remaining desirable and less important plants would be

killed, and the range would continue to deteriorate. The same process might occur in areas in an upward trend as less forage became available and competition for forage became greater.

As the overall production capability of the land decreased, it would support fewer animals and lifeforms dependent upon vegetation and soil. Eventually, the range might be able to sustain only a few animals and other lifeforms.

The continued loss of productivity and capability of the land to support domestic livestock, game, birds, and other living organisms would decrease the quality of human life. It would also increase the scarcity of meat or require a shift of animals to other lands. More animals on private lands would require more intensive use of these lands, viz., more acreage in pastureland, harvested forages and feedgrains, and greater dependence on feedlots for meat production.

The capability of private lands to produce forage and other crops might also be decreased due to downstream flooding and other damage resulting from poor and deteriorated watershed conditions.

Terrestrial

The following assumptions are made relative to changes that might occur in wildlife populations or their habitats during the next fifteen years if the proposed action is not taken: (1) A few additional waters would be developed in needed areas for livestock management, which could open up new areas to livestock use where there was previously little or none; (2) some livestock trespass would continue to occur, producing additional use on ranges already in poor condition; (3) very few, or no, new livestock grazing systems would be initiated; (4) there would be a slight reduction in numbers of livestock using the unit because of declining range condition, but seasons of use would remain essentially the same as at present; and (5) the Idaho Fish and Game Department would establish hunting seasons that would permit at least slight increases in the numbers of all species of big game in the unit. Deer numbers are at their lowest level for many years and are below the current carrying capacity of their habitat.

The following trends would be expected for wildlife and its habitat during the next fifteen years:

(1) All populations of big game animals would increase slightly. Estimates of numbers for 1990 are provided in TABLE 2-50 and are essentially the same as would be expected under the No Action Alternative. Estimates of acreages of crucial habitat in different condition classes for various game species are also shown in the table.

TABLE 2-50

ESTIMATED NUMBERS OF DEER, ELK, ANTELOPE, BIGHORN SHEEP, AND SAGE GROUSE, AND CONDITION OF THEIR CRUCIAL HABITAT IN 1975 AND 1990 WITHOUT THE PROPOSED ACTION [1/]

Species	Estimated Number		Habitat Condition (Acres and Percent) [2/]					
			1975			1990		
	1975	1990	Poor	Fair	Good	Poor	Fair	Good
Deer								
	S 330- 590	S 500- 700	W26,111	W25,992	W 1,885	W31,309	W20,982	W 1,697
	W 2300-3100	W 2500-3500	(48.4%)	(48.1%)	(3.5%)	(58.0%)	(39.0%)	(3.5%)
Elk								
	W 190- 225	W 200- 275	W 228	W 1,206	W 543	W 409	W 1,079	W 489
			(11.5%)	(61.0%)	(27.5%)	(21.0%)	(55.0%)	(24.0%)
Antelope								
	Y 1100-1300	Y 1200-1350	Y22,105	Y25,323	Y 8,694	Y27,170	Y21,128	Y 7,825
			(39.0%)	(45.0%)	(16.0%)	(48.0%)	(38.0%)	(14.0%)
			S 6,272	S13,408	S 6,932	S 8,283	S12,000	S 6,239
			(24.0%)	(50.0%)	(26.0%)	(31.0%)	(45.0%)	(24.0%)
Bighorn Sheep								
	W 60- 100	W 100- 125	W 3,205	W 3,827	W 107	W 4,162	W 2,881	W 96
			(44.9%)	(53.6%)	(1.5%)	(58.0%)	(40.7%)	(1.3%)
Sage Grouse								
	Y 1400-3400	Y 2000-4000	BN 8,516	BN 5,679	BN 0	BN 9,936	BN 4,259	BN 0
			(60.0%)	(40.0%)		(70.0%)	(30.0%)	
			W 0	W 913	W 2,713	W 183	W 1,273	W 2,170
				(25.2%)	(74.8%)	(5.0%)	(35.0%)	(60.0%)

1/ For most species numbers are below present carrying capacity.

2/ Y = Yearlong S = Summer W = Winter BN = Brooding/Nesting.

(2) Small animal and bird populations would remain fairly constant.

(3) Cattle would continue to graze many pastures during the early spring prior to the critical hatching period for many birds, with the result of some trampling and/or nest abandonment. Antelope and deer also fawn at about this time which is also the peak reproductive stage for small animals facing immediate forage competition. This regular annual use by livestock would continue to cause competition, stress, and some mortality in various species, the extent of which is unknown.

(4) Riparian habitat for terrestrial species, especially stream bottoms and wet meadows, is currently heavily used and would continue to be heavily used with gradual further deterioration.

(5) Canyon slopes and hillsides adjacent to valley bottoms would continue to receive heavy cattle grazing, including use of browse species, because of their close proximity to water. The two bighorn sheep bands on the East Fork of the Salmon River and main Salmon River depend upon the low elevation and rocky hillsides for their winter forage. Assuming poor winter forage is partly responsible for decline in the sheep herds, forage competition with domestic livestock, which has been high in localized areas, could adversely affect reproduction and survival of these bighorn bands, if continued.

(6) Authorized cattle grazing in late summer and early fall would continue to occur in many allotments, creating continued competition for forage used by several species of big game in winter.

The bases for the habitat changes that would be expected to occur by 1990 are: (1) type of vegetation required by the various grazing

animals, (2) continued utilization of the various vegetation types by livestock, and (3) type of area of competition (steep slopes, flat valley, stream bottoms, etc.). With continued livestock use essentially as at present and considering the above factors, it is expected that the ranges for the various game species would gradually deteriorate in the approximate percentages shown below. These percentages are used in calculating the acreages of various condition classes that could be expected. Despite the fact that many ranges are presently in poor to fair condition, there is still forage available for slight increases in game numbers, partly because of inaccessibility to livestock, lack of adequate livestock water, or different forage types needed by the game animals during their critical periods of use, e.g., winter elk use of mountain mahogany, winter deer use of sagebrush, etc.

Estimates of habitat change expected largely because of heavy livestock use, but partly because of joint big game and livestock use in some areas are as follows:

	Winter Range		Yearlong Range
Deer	Fair to Poor -- 20%	Antelope	Fair to Poor -- 20%
	Good to Fair -- 10%		Good to Fair -- 10%
	Winter Range		Summer Range
Elk	Fair to Poor -- 15%		Fair to Poor -- 15%
	Good to Fair -- 10%		Good to Fair -- 10%
	Yearlong Range		Brooding/Nesting Range
Bighorn Sheep	Fair to Poor -- 25%	Sage Grouse	Fair to Poor -- 25%
	Good to Fair -- 10%		
			Winter Range
			Fair to Poor -- 20%
			Good to Fair -- 20%

Wild Horses

It is assumed that horses would be managed at a minimum number of 150 and a maximum number of 300 to meet objectives of the Challis Wild Horse Management Plan. TABLE 2-51 indicates the maximum and minimum number of horses that would be managed in each allotment. It is also assumed that these approximate numbers would be maintained in each allotment.

The horses have increased from the 1971 level of 150 to a 1975 level of 410, representing an approximate 270% increase in four years. When the herds are brought back to the 150-300 level, additional feed should be available as a result of reduction in numbers. Improved feed would contribute to the overall health and condition of the herd. Horses would continue to have a competitive advantage over livestock by being able to use much of the rougher, steeper country and by being able to graze greater distances from water.

Inbreeding within the herd might become a problem. Prior to 1971, ranchers released stallions and other horses into the wild horse herd, which served to minimize inbreeding and improve the quality of the herd. Since 1971, no new horses have been introduced and because of this decrease in the gene pool, inbreeding could quite possibly become a significant problem in the future. Signs of this would be manifest in such things as smaller size, poor conformation, big heads, and a variety of other such factors.

TABLE 2-51

MINIMUM AND MAXIMUM NUMBER OF WILD HORSES BY ALLOTMENT
AFTER HERD REDUCTION

Allotment	%	Minimum	Maximum
Red Lake	17	25	51
Road Creek	7	11	21
Warm Springs	40	60	120
San Felipe	23	35	69
Split Hoof	9	13	27
Total	96 1/	144 1/	288 1/

1/ Figures do not add to the 150 or 300 minimum-maximum of horses because some horse use is being made in Malm Gulch areas which have been excluded from livestock grazing.

Aquatic Life

Important populations of anadromous fish (chinook salmon and steelhead trout) produced in the Salmon River, East Fork, and Herd Creek would remain at their present low levels of abundance. This is due in part to reduced productivity of these streams from adverse habitat changes caused by irrigation withdrawals, livestock grazing, roadbuilding, mining, and stream alterations. The most serious factor responsible for small runs of anadromous fish returning to streams within the unit in recent years is the heavy mortality of downstream migrating smolts at dams on the Snake and Columbia Rivers. Both direct and delayed mortality of returning adult migrants also occurs, but the heavy loss of young fish is the principal reason for the small adult runs (Collins, et.al., 1975; Mallet, 1972; Merrell, et.al., 1971; Ortmann, 1974; Parrish, et.al., 1973 and 1975; U.S. Army Corps of Engineers, Walla Walla District, 1975a and b; and Weiss, 1970).

Most of the loss of downstream migrants at dams is due to direct mortality when fish pass through turbines, but increased mortality due to predation of injured or stunned fish below dams can also be substantial (Collins, et.al., 1975). Supersaturation of nitrogen gas during years of high flows when large amounts of water are passed over spillways also causes mortalities.

Loss of the salmon fishery in the Challis area, as in 1975, caused a considerable loss in revenue and recreational opportunities for Idaho citizens and nonresident anglers. The U.S. Army Corps of Engineers is currently attempting to obtain funds to mitigate for the losses of fish at Snake River dams as requested by the fishery agencies of Idaho,

Oregon, and Washington. A draft environmental impact statement covering this proposed action was issued during February, 1975 (U.S. Army Corps of Engineers, Walla Wall District, 1975a).

The withdrawal of water from streams for irrigation is widespread throughout the unit. Part of the basic productivity of the aquatic ecosystem is lost through each diversion, and the effects are cumulative on the East Fork and main Salmon Rivers. Other irrigation diversions from the East Fork and main Salmon Rivers draw a substantial part of the low summer flows from these major anadromous fish-producing areas. This practice has further reduced fish populations and undetermined amount in the Challis Unit and has indirectly affected water quality.

Sedimentation of streams has been identified as the single most important nonpoint source of pollution in the United States (Environmental Protection Agency, 1973). Road construction, overgrazing, and stream alterations have all contributed to increased sedimentation of some streams within the unit. Sedimentation from poor mining practices in past years has also reduced fish production in streams like Thompson and Squaw Creeks (VTN Colorado, Inc., 1975).

Until the fish passage problems have been mitigated, salmon and steelhead runs will continue to be small and fishery values foregone both within the Challis Planning Unit and in downstream fisheries. After fish mortalities associated with mainstem dams are reduced, the fishery could reach its magnitude of the 1960s if spawning populations of chinook and steelhead remain large enough and habitat conditions do not deteriorate further in larger streams within the unit. Releases of hatchery fish in the upper Salmon River watershed could further enhance the fishery.

Resident populations of trout and whitefish produced in streams flowing through national resource lands (NRL) in the unit contribute fish to a yearlong fishery in the Salmon River and a summer fishery in tributary streams. Continued sedimentation and other physical habitat changes in smaller streams would probably cause a small decrease in the present populations of game fish, especially if the apparent downward trend of range condition continues. Populations of nongame fish in tributary streams would be similarly affected by continuation of present grazing use.

Under expected grazing practices, streams with poor habitat conditions for aquatic life would continue to remain in poor condition. Where watershed conditions deteriorated under expected use, habitat in tributary streams listed in fair or good condition would begin to decline, resulting in less basic productivity and smaller populations of fish.

An estimated 9.7 miles of streams are expected to decline in habitat condition (TABLE 2-52) - one mile from good to fair (East Fork), and 8.7 miles from fair to poor (resident fish).

Present and projected habitat conditions for most of the smaller streams, in the Challis Unit listed in TABLE 2-52 are classified as either fair or poor.

TABLE 2-52

FUTURE HABITAT CONDITIONS OF FISH-PRODUCING STREAMS ON NRL WITHIN THE CHALLIS UNIT WITHOUT THE PROPOSED ACTION

Habitat Type	Estimated Miles by Habitat Condition (Percent in Parenthesis) Future (1990) Good	Fair	Poor
Anadromous & Resident Fish			
Stream or Creek			
Salmon River	14.0	3.5	
East Fork		5.0	
Herd		3.5	
Lake			1.0
Big Lake			1.2
Big Boulder		.8	
Little Boulder		1.3	
Squaw			.2
Thompson			2.0
Challis	.5		
Totals	14.5	14.1	4.4
	(44)	(43)	(13)
Resident Fish Only			
Stream or Creek			
Lake			2.8
Road			8.0
Big Lake			.3
Corral		.5	
Squaw			1.3
Horse Basin			4.0
Mosquito			1.7
Bear			1.1
Spud			1.2
Warm Springs			1.5
Thompson		5.5	
Pine		1.8	
Garden	.5		
Mill			3.6
Birch			2.0
Bayhorse		.3	2.0
Bruno		3.0	
Sullivan	1.5		
French			1.4
Lyon		1.2	
Kinnikinic		3.5	
Totals	2.0	15.8	30.9
	(4)	(33)	(63)
Challis Unit Totals	16.5	29.9	35.3
	(20)	(37)	(43)

Years of livestock use has caused adverse physical changes in habitat conditions which have resulted in decreased fish populations, the magnitude of which is unknown but considered substantial in most smaller streams. The Salmon River and East Fork have not been impacted as much smaller streams because (1) a large part of these streams are inaccessible due to private ownership, roads, and topography; (2) their streambanks are composed primarily of larger alluvium, boulders and bedrock; and (3) not many livestock are present on national resource lands (NRL) adjacent to these largest streams during summer months due to the pattern of livestock grazing on public lands in the unit.

The importance of bank cover for fish has been documented by research studies (Boussu, 1954; White and Brynildson, 1967; Elser, 1968; Gunderson, 1968; and Lorz, 1974). Bank cover consists mostly of both low (grasses, sedges, and young shrubs) and high (shrubs and trees) vegetation and undercut banks. Where good bank cover exists, trout populations are considerably larger in number and size than in areas of little such cover. Good bank cover increases the carrying capacity of streams by making more area acceptable to fish as "living space" where they can rest and feel secure from predators. Overhanging vegetation also provides a route for terrestrial insects to fall into streams and become food for fish.

Sedimentation of streams results from natural geological erosion, but it has been accelerated by livestock grazing in the Challis Unit. Much of the vegetative cover of watersheds has been removed, resulting in increased overland flow and the influx of sediment into streams.

Heavy sedimentation from deteriorating watersheds and eroding streambanks and gullies has the following detrimental effects on stream habitat which reduces populations of salmon and trout: smothers eggs laid in gravel redds and prevents proper development of embryos by preventing sufficient intragravel flow of highly-oxygenated water; forms a physical barrier to fry emergence after hatching by blocking the route of egress between gravels; reduces survival of fry after emergence because escape cover in rubble and gravel areas is filled in; reduces aquatic organisms that are food; fills in rearing pools; and changes the basic ecology and biolgoical productivity of streams which reduces their carrying capacity for fish (Cordone and Kelly, 1961; Environmental Protection Agency, 1971; Hall and Lantz, 1969; McNeil and Ahnell, 1964; Phillips, 1971; Shelton and Pollock, 1966; Shumway, et. al., 1964; and Silver, et. al., 1963).

Fish populations of altered streams are reduced drastically because cover provided by pools, undercut banks, and streamside vegetation is lost (Gebhards, 1970 and Irizarry, 1969). An altered stream channel also produces less aquatic insect food for fish, and the amount of terrestrial insects available for food decreases correspondingly with the decrease in overhanging vegetation.

Research studies showing the combined effects of the above adverse habitat changes on fish populations have not been conducted on streams in the Challis Planning Unit. However, comparative studies between populations of brown trout (Salmo trutta) in relatively natural vs. heavily grazed sections of Rock Creek (Montana) and the Little Deschutes River (Oregon) show the magnitude of the impact livestock grazing has on

trout populations (Gunderson, 1968; Marcuson, 1971; and Lorz, 1974). The following data are summarized from these studies.

Numbers and Pounds of Brown Trout Per Acre

	Natural Area		Overgrazed Area		Greater Population in Natural Area	
	No.	#	No.	#	No.	#
Rock Creek (1964)	442	111	384	76	94(27%)	35(44%)
Rock Creek (1969)	1,880	213	701	63	1,179(168%)	150(238%)
Little Deschutes (1970)	2,316	195	463	48	1,853(400%)	147(305%)

Between 27 and 400% more brown trout were present per acre in stream sections with good vegetative bank cover than in heavily grazed areas with little bank cover. There was 76% more cover per acre on Rock Creek along the ungrazed section than in the grazed section (Gunderson, 1968). During a flood which occurred on Rock Creek in 1967, 77% of the stream channel was altered in the overgrazed area compared to 18% of the stream channel altered in the natural area (Marcuson, 1971).

In the above studies, bank cover was found to be the most important factor governing abundance of brown trout. Results of another study in Idaho showed livestock use was damaging the overall aquatic habitat and salmonid populations in Bear Valley Creek by removal of bank cover and sedimentation (Platts and Rountree, 1972).

Livestock grazing removes streambank resulting in increased water temperature of smaller streams through direct solar radiation over a larger surface of the stream. Higher than normal water temperatures have undesirable influences on concentrations of dissolved oxygen, growth of aquatic plants, composition of aquatic species, and condition and behavior of fish. Higher than optimal water temperatures (above

65°F) for summer rearing of young anadromous fish and trout have apparently not been a problem in streams of the Challis Unit. Little change in summer water temperatures would be expected in future years without the proposal.

The addition of animal wastes to streams could cause water quality problems for fish if enough organic material enters small streams. Organic loads exert a high biochemical oxygen demand as bacteria carry out metabolic breakdown of cow manure and, if coupled with high summer water temperatures, could reduce dissolved oxygen concentrations to lethal levels for fish and other aquatic life. This problem probably does not occur often on open rangeland, unless a large number of livestock are concentrated along a small stream for prolonged periods of time. The amount of animal wastes entering streams in future years would remain about the same, unitwide, as under existing use.

Except for the September 22, 1975 bacterial analyses in Road Creek (refer to TABLE 2-8), there have been no continuous sampling for fecal coliform in streams of the Challis Unit.

Unhatched fish eggs in gravel redds and very small trout and salmon fry are susceptible to damage from livestock while domestic animals are walking in stream channels. This type of fry and egg mortality undoubtedly occurs occasionally, but it is not considered a significant impact on fish populations in the Challis Unit. Egg and/or fry mortality would be most likely to occur with spring-spawning resident species in small streams. The overall effect of this direct mortality on fish populations of the Challis Unit would not be expected to change much in future years.

Jimmy Smith Lake is a relatively shallow lake, but neither its trout population nor the trout population in Herd Lake is expected to change much in the immediate future. These lakes are gradually becoming filled with sediments from natural causes and grazing use of their watersheds. This long-term process usually requires many decades or centuries before the habitat becomes unproductive (shallow, warmer water) for trout.

VISUAL RESOURCES

The primary characteristic of the present day landscape is naturalistic uplands surrounding rural settlement in the valleys.

There have been some modifications to the natural landscape through grazing and mining activities, and obviously the valleys have been highly modified by rural development. Past modifications will remain in the future environment, although time will probably lessen the initial impacts. Some of the scars or intrusive elements of these features will have been healed by vegetative growth or the actions of weathering.

The success of maintenance on improvements made in the upland areas would determine the degree these features intrude into the future environment.

Since most of the land within the proposal, except for a few patented mining claims, is under federal control, the natural landscape should remain free from encroachment.

About 10% or 36,000 acres of the total land area is privately owned, thus providing an adequate land base for rural expansion without public pressure for the conversion of more federal land for these purposes.

It must be assumed that because tourism is an important part of the local economy, county officials would have developed adequate zoning to keep development in the valleys comparable with high quality visual resources in the unit.

The visual resource quality of the Challis Unit should remain high through efforts of the BLM, with sightseeing continuing as the number one recreation activity in the unit.

As noted in the preceding Aquatic discussion, fishing opportunities in the East Fork and Salmon Rivers would remain poor unless certain steps are taken to mitigate anadromous fish losses at downstream dams on the Snake River. Fishing opportunities for other than anadromous fish would continue on the same downward trend as is reflected in TABLE 2-33. 1/ More than anything else, the total number of days spent fishing could be correlated directly to anadromous fishing in the East Fork and Salmon. More total closures of these rivers for salmon and steelhead fishing could be anticipated in the future. Fishing and hunting opportunities in the future would reflect many factors other than those directly related to livestock grazing in the Challis Unit, especially those associated with the anadromous fishery.

Although the number of hunter days has been increasing, harvest has not kept pace, reflecting a downward trend in hunter quality. In the near future the actual hunter days will decrease as the Idaho Fish and Game Department adjusts hunting seasons in an attempt to increase big game population. If these efforts are successful, the total number of hunter days in the Challis Unit should increase at the end of the fifteen-year period, corresponding to the larger game populations. Populations of upland game birds would remain constant as would the hunting opportunities.

1/ It is assumed that downstream mitigation will improve anadromous fish escapement to Idaho and result in an improvement in fishing opportunities. This would compensate for the declining status of resident fish populations.

Semideveloped recreation sites would still be subject to degradation by livestock trampling and defecation, and a conflict would remain between livestock operations and intensive recreation use.

To keep pace with the increased recreation use in the Challis Unit, especially as related to tourist traffic on U.S. Highways 93 and 93A, additional facilities would be provided. These new sites would be fenced to exclude livestock, and as a result, the individual forage base would be slightly reduced.

Recreational use of the Sawtooth National Recreation Area (SNRA) would increase, predictably 3% annually. Since the East Fork road provides access to the White Cloud Peak portion of the SNRA, more national resource lands (NRL) on the Upper East Fork would be developed to accommodate recreation users entering from the east side. Again, more land in the unit would be subjected to conflicts between the recreation user and livestock operations.

According to projections in the State Comprehensive Outdoor Recreation Plan (SCORP), 1973, the total demand for general recreation activities in Park Region VI, which includes the Challis Unit, would increase at a rate of 8% during the period from 1975 to 1980. It is assumed this trend would continue through the fifteen-year period for those activities normally occurring in the unit, except for hunting and fishing as discussed above.

TABLE 2-53 contains predicted fishing and hunting use days if present livestock management practices continue.

TABLE 2-53

PREDICTED FUTURE FISHING AND HUNTING USE DAYS
WITH CONTINUATION OF PRESENT LIVESTOCK MANAGEMENT

Resource or Component	After 15 Years/Days
Fishing	10,000
Hunting	22,000

AGRICULTURE

Livestock Grazing

The range condition would be expected to decline if present management continued until 1990. This would probably result in reduced numbers of domestic livestock using the area. The six-year average of active licensed use is 17,426 AUMs and the projected grazing use, based on the apparent trend data, is 14,256 AUMs. TABLE 2-54 shows the predicted active AUM use by 1990.

TABLE 2-54

LIVESTOCK GRAZING USE WITHOUT IMPLEMENTATION OF THE PROPOSAL 1/

Historical Use Area	Predicted Active Use AUMs 1990
Bradbury Flat-Lone Pine	550
Bradshaw Basin	344
East Fork	970
Garden Creek	761
Herd Creek	1,000
Maraffio	106
Road Creek	369
Round Valley	305
San Felipe/Peck's Canyon	2,689
Squaw Creek	1,077
Warm Springs	6,038
Woolley	47
	14,256

1/ For comparative purposes refer to Figure 2-60 which is an active use trend line derived by the team economist.

FOREST MANAGEMENT

The gradual increase in livestock use that is anticipated in the coniferous vegetative type could adversely affect benefits derived from intensive forest management practices. Thinnings, for example, open the forest canopy allowing sunlight to penetrate to the forest floor, causing temporary increases in forage growth. Livestock searching for new forage could be expected to concentrate in these areas and cause certain adverse effects. Soil compaction would occur with resulting water runoff (see Soils and Water Resources Section for Existing Environment) and forage proliferation, especially grasses, could cause soddy conditions to develop. In either case, the residual trees would receive less water than would normally be expected. Since concentration of limited water supplies to the individual trees is one of the primary purposes of thinning, any curtailment of this process would result in a decline in expected tree response to the treatment, or in extreme cases, growth stagnation.

Natural regeneration expected as a result of utilizing selective cutting harvest methods would be inhibited by excessive livestock use, especially during the first five years following harvest. Openings in the forest canopy created by individual tree removal allow necessary sunlight and rainfall penetration to the forest floor, promoting tree seed germination. If heavy livestock use occurred during the critical period, soil compaction could cause a decline in seedbed conditions and

in the number of seed germinating. Additionally, trampling would cause severe damage to tender seedlings. Established seedlings would be less susceptible to this type of damage.

The above examples of conflict between livestock use and certain intensive forest management practices are intended to illustrate that the effects of a gradual increase in livestock use during the next fifteen years could have subtle effects on timber stands of the future if the use became concentrated. Over a 100-year rotation period, a 50% reduction in wood fiber production could be expected on treated areas that received heavy use. Lesser intensities of use would cause correspondingly lessened long-term yield reductions.

CULTURAL RESOURCES

Cultural resources within the Challis Planning Unit are on a downward trend.

This trend is primarily the result of five factors:

(1) Trampling by domestic livestock

(2) Accelerated erosion caused by trampling or lessening of ground cover (overgrazing)

(3) Land use management practices which inadvertently ignore cultural resources

(4) Geologic erosion

(5) Vandalism.

The environmental assessment now required on federal lands where surface disturbance actions are proposed has helped alleviate some of the present trend. However, trampling, accelerated erosion caused by trampling or overgrazing, and public vandalism still occur, and the downward trend of cultural resources is expected to continue or increase under the present land use management program.

SOCIO-ECONOMIC CONDITIONS

Population

The population of Custer County and the region reached a peak of over 7,000 persons during the mining boom in the 1880s. Subsequent exhaustion of high grade ores and long distances from a railroad brought about a rapid decline in mining activity and population. Custer County has experienced a long-term population loss and continued outmigration. The net outmigration has been reflected in relatively low percentages of persons in the 15 to 34 age group. Although the population of the county has been gradually declining, the population of Challis has been gradually increasing since about 1950.

Population estimates since the 1970 census indicate a new trend may be developing in several rural Idaho counties, including Custer County. Where the population is predominantly rural, population density low, and livestock and farms furnish much of the employment, many counties experiencing long-term population loss and continued outmigration are now gaining population. The rate of outmigration appears to have slowed or reversed in many rural counties. Custer County showed an estimated 3% gain between 1970 and 1973 (Bureau of Census, 1974), and an estimated 11% gain between 1970 and 1974 (Idaho Department of Health and Welfare, 1975). TABLE 2-55 contains Custer County and State of Idaho population data for years 1950-74. For the period 1960 to 1970, Custer County experienced a net outmigration. The picture appears to have been changing since about 1970. The county shows a net inmigration comparable to that experienced by Idaho as a whole during 1970-1974 (TABLE 2-56).

TABLE 2-55

CUSTER COUNTY POPULATION DATA 1950-1974 [1]

County/City	1950	1960	1970	% Change 1960-1970	1973 [2]	% Change 1970-1973	1974 [3]
Custer	3,318	2,998	2,967	- 1.0	3,055	3.0	3,300
Challis [4]	728	732	784	7.1	850	8.4	
Clayton	----	----	36	----	41	13.9	
Lost River	37	58	40	-31.0	46	15.0	
Mackay	760	652	539	-17.3	584	8.3	
Stanley	33	35	47	34.3	52	10.6	
Idaho	588,637	667,191	712,567	6.8	775,721	8.9	799,000

1/ (U.S. Department of Commerce, Bureau of Census, 1974).

2/ Population Estimates and Projections, U.S. Department of Commerce, Bureau of Census, Series P-25, No. 557.

3/ Estimate by Idaho Department of Health and Welfare, Bureau of Vital Statistics.

4/ County seat.

TABLE 2-56

CUSTER COUNTY AND STATE OF IDAHO MIGRATION DATA 1960-1974 [1/]

Area	Population 1960	Population 1970	Population 1974	% Change (1960-1970) (1970-1974)	Components of Change (1960-1970) (1970-1974) Births	Deaths	Net Migration	Migration Rate
Custer County	2,998	2,967		- 1.0%	519	289	- 259	-8.6%
			3,300	11.2%	200	100	200	7.8%
Idaho	667,191	712,567		6.8%	145,778	58,373	-42,029	-6.3%
			799,000	12.0%	61,000	27,000	51,000	7.2%

1/ 1960 and 1970 data from U.S. Bureau of Commerce Report, General Demographic Trends for Metropolitan Areas, 1960 to 1970, PHC (2)-14 Idaho, May, 1971.

1974 Data are from U.S. Department of Commerce, Bureau of Census, Current Population Reports, Population Estimates, Series P-26, No. 106, May, 1975.

Estimates of future population trends are shown in FIGURE 2-58. With a relatively long history of population decline and relatively few years of population increase, long range projections reflect a range of variability. If present observed trends continue, population numbers should fall within the low and high estimates. Any sizeable new industry locating in Challis would influence the projections.

Employment

For a number of years, the percentage of persons employed in the agricultural sector of Idaho's economy has gradually declined. Growth of manufacturing, food processing, retail trade, and service industries has increased employment in those sectors. Improved farm operations and mechanization have influenced the declining percentage of persons employed in agriculture - particularly in crop production such as potatoes, beets, grain, and to some extent hay. This trend appears to have affected farming more than livestock operations. The trend toward fewer and larger farms and ranches contributes toward fewer persons engaged in agricultural employment.

In 1962, the State of Idaho reported a seasonal low of 353 and and a high of 690 persons employed in agriculture in Custer County. In 1972, the low was 338, and the seasonal high 488. On an average, this reflects a decline of about 20% in a ten-year period or 2% annually. If population increased and agricultural employment remained constant, the percentage of persons in agriculture would still decline. If population increased as recent trends indicate, and actual number of persons employed on farm and ranches declined, the percentage of persons in agriculture would decline even more.

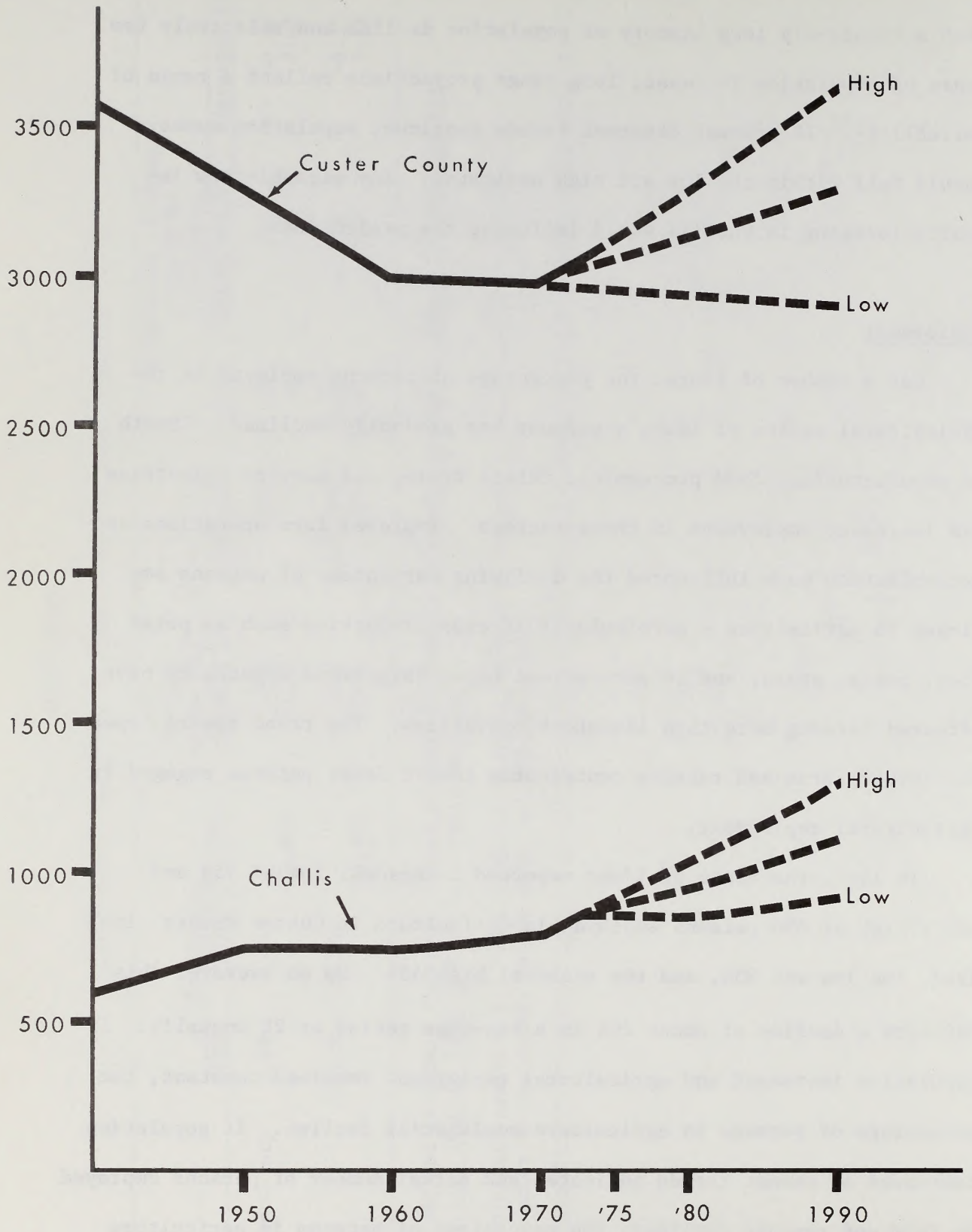


FIGURE 2-58 POPULATION TRENDS

The trade and service sectors have been increasing in recent years in Custer County, even though population decreased. From 1962 to 1972, employment in these sectors increased about 45% according to State of Idaho records (Department of Employment, 1964, 1973). The trade and service sectors are dependent on the basic industries of farming, livestock production, mining, and timber production. However, expenditures by fishermen, hunters, tourists, and the government sector occur in trades and services, which influence the number of employees. For instance, if the steelhead and salmon fishing increased or decreased, the changes would be reflected in Challis' trades and services employment. Although dependent on a variety of factors, the trend toward increased employment in trades and services is expected to continue.

State and federal government employment increased from 270 in 1962 to 287 in 1972 - an increase of about 6%.

Personal Income

Personal income has been most thoroughly presented in "Personal Income in Idaho Counties" (Bollinger, 1969, 1975). Total personal income in Custer County increased from $3,981,000 in 1958 to $8,707,000 in 1972. These figures include all forms of income. During the period 1962 to 1972, total personal income increased about 72%. Trends indicate total personal income will probably continue to increase at a rate of about 7% annually.

Similarly, per capita income has increased and is expected to continue to increase in the foreseeable future. Per capita total personal income increased about 72% from 1962 to 1972. Detailed personal income data for Custer County is included in APPENDIX 2-K.

Industry Income

Historically, Custer County's industry income was dominated by mining; then, as the high grade ores dwindled, livestock production assumed dominance. In more recent years, livestock and the farm industry have made up about one-third of the total industry income. In 1973, farm and ranch income represented about 39% of industry earnings as reported by the Bureau of Economic Analyses (Salmon, Sept., 1975). Of the 61% nonfarm industry, over half (about 57%) was from the private sector with the balance from local, state, and federal government.

Agriculture has long been considered the cornerstone of Idaho's economy. However, the state's economy has been experiencing diversification within the past decade, particularly in the manufacturing sector. Phenomenal growth in factories producing mobile homes and recreational vehicles occurred between 1965 and 1972. Wood products and food processing have sharply increased. Other industries experiencing growth are chemicals, sugar, and meatpacking. The trade and service industries have registered steady growth with Idaho's growing population and expanding economy.

In contrast, Custer County trends do not indicate major shifts in industry income. Low population density, distance from major population centers, and distance from transportation systems are factors influencing

continuation of past trends. Proposed expansion of mining operations would greatly affect the Challis economy. However, in the absence of such a major event, industry income is expected to follow current trends with little change in the percentage each industry now contributes.

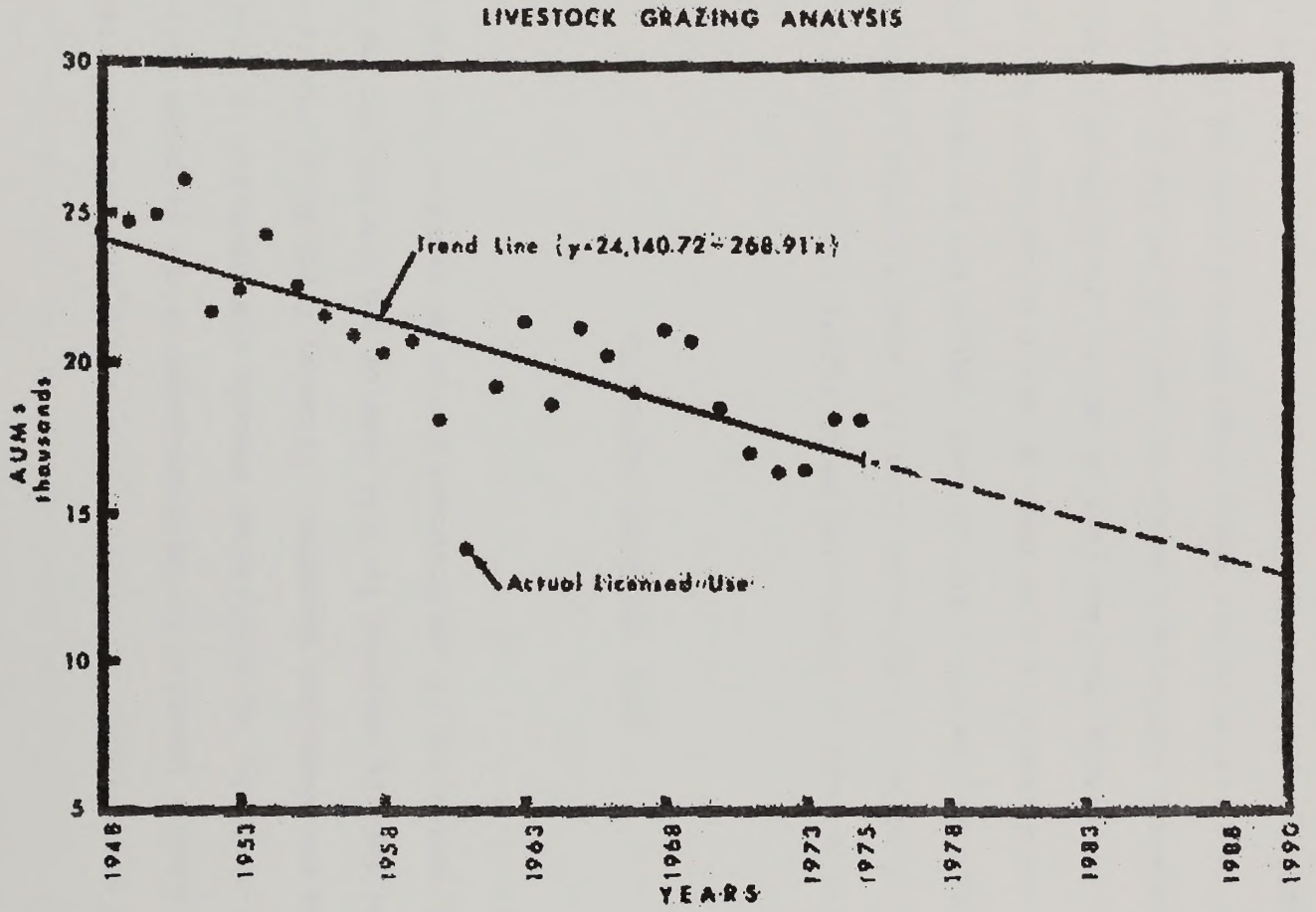
Livestock Income

Livestock products have consistently made up about two-thirds of all agricultural income, and cattle and calves represent over half of all livestock products. It appears this trend will continue.

Cash receipts from cattle and calves increased steadily between 1967 and 1972 and this trend is expected to continue. Operating expenses remained about the same during 1965-1967, but began to increase more sharply in 1968. Nationwide, agriculture in general has experienced a cost-price squeeze which limits net income, and the livestock industry has considered this a problem.

The current outlook projects a leveling off of operating costs, and a strengthening of prices received (ERS, Nov. 1975). For the years 1969-1972, it appears cash receipts for cattle and calves in Custer County increased more rapidly than operating expenses. Since net farm and ranch income is dependent on both costs and prices received, a clear trend is difficult to identify.

Since direct income to the livestock operator is generated through the sale of livestock, the numbers of livestock or levels of grazing use give an indication of trend. Based on the historical record of AUMs active grazing use from 1948 to 1975 (TABLE 1-1), a decreasing trend is evident. A least squares linear trend line was developed from this information and is shown in FIGURE 2-59. The equation y24,140.72-268.91x is where y is the number of AUMs active use in a given year and x is the year for which an estimate of projection is desired. The trend line indicates that the "average" annual decrease in AUMs of active grazing use over the 28-year period was 268.91. This trend is expected to continue into the future.


LIVESTOCK GRAZING ANALYSIS
30
25
20
15
10
5
AUMs thousands
Trend Line (y=24,140.72-268.91x)
Actual Licensed Use
1948
1953
1958
1963
1968
1973
1975
1978
1983
1988
1990
YEARS

CHAPTER 3

ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION

Impacts are analyzed for those environmental elements predicted to be significantly impacted by implementation of the proposed action. Based on the analysis, no significant impacts are predicted to occur on the following environmental elements: Climate, Topography, Minerals, and Geology. The impacts analyzed in this chapter are unmitigated impacts based on implementation of the proposed action as designed and described in Chapter 1.

SOIL AND WATER RESOURCES

General

Intensive grazing of vegetation would result in a reduction of plant litter which would otherwise cover the ground spaces between plants, as well as physically disturb and compact the surface of the soil. This would result in a decrease of water infiltration into the soil thereby increasing overland flow of water. An increase in overland flow would increase erosion and sedimentation. Depending on slope length and distance to a stream or dry wash, water quality could be lowered. Increased erosion could possibly reduce the soil productivity over time.

As a result of vegetative ground cover removal, trampling of streambanks, and concentration of animals in wet meadow areas, bacterial wastes, coupled with an increase in overland flow, could lower water quality in perennial streams. Possible impacts on aquatic life as a

result of sedimentation and other factors associated with soil and water resources are discussed in the aquatic life section of this chapter.

The very steep slopes (greater than 60%) have very little livestock use on them at present. The proposed action would not substantially increase the use on these slopes, over current use. Sediment production would not be signficantly affected.

Steep slopes (30 to 60%) are not being extensively used at present. During Treatment A (which is basically grazing from entry through seedripe, i.e.: 5/1 - 7/20) more livestock use would be forced onto these slopes (average of 133,000 acres per year under Treatment A) resulting in increased (over present) removal of vegetative ground cover. This would result in an increase in overland flow and sediment production which could be carried from these slopes to the lower slopes by the many well defined drainage channels present on the area. This increase would result in lowering of water quality.

Moderate slopes (0 to 30%) presently receive the majority of grazing use. These areas presently generate the largest volume of sediment in the unit. Under the proposal, especially with Treatment A, the majority of the use would be on these slopes. With the increased removal of vegetation and surface disturbance, overland flow would increase. Increased overland flow would carry sediment deposited on these areas from the 30 to 60% slopes, as well as from these specific slopes and move it further downstream until it finally reaches a perennial stream. Intensive runoff events which would have a frequency of one in five years would hasten this process and increase deposition

of sediment into a perennial stream. This loss of soil would reduce the productivity on these slopes as well as lower water quality.

Trampling by grazing animals causes surface disturbance by loosening surface soils which are then easily moved by either wind or water. In addition to the above, trampling by livestock disrupts the over-winter cracking of the surface of some soils and hastens the natural setting of the soil following winter frost heaves. These phenomena would reduce soil infiltration and, therefore, aid in increasing overland flow and sediment production.

Soil compaction from trampling by livestock would detrimentally influence both soils and plants, especially in Treatment A pastures and in areas of concentration of animals such as around water developments and animal trails. Compaction alters the soil macrostructure in terms of less pore space, especially when the soils are moist or wet, resulting in a reduction of infiltration and percolation of soil moisture. This can reduce the depth to which grass roots penetrate and result in less total herbage production. It is difficult to quantify the impact of compaction upon vegetation and erosion, as the interacting factors listed above result in varying degrees of compaction. Compaction can range from appreciable damaged soil structure to almost total loss of structure. Trampling effects are most severe for moderately wet soils and those with a high clay content. Reduction in vegetative cover could also increase soil compaction from heavy rainfalls. Force exerted by the heavy downpours ranges from about 0.15 to 2.0 foot pounds per square inch. In contrast to bare areas, vegetation and litter covering the soil absorb most of this energy.

As infiltration rates are decreased and surface disturbance is increased through loss of vegetation in Treatment A areas (average of 133,000 acres annually), overland flows and sediment loss can be expected to increase by approximately 25 to 35%. This loss would occur for approximately six to nine years until the ground cover increased sufficiently as a result of being rested during Treatment C.

In Treatment B (which is basically grazing after seedripe, i.e.: approximately 7/20) there would generally be less forage removal by livestock and a decrease in surface disturbance. This would occur on an average of 105,000 acres annually. Since less forage would be removed, infiltration rates would be greater than during Treatment A and less overland flow should occur. This would result in a decrease of 5 to 10% resulting in reduced sedimentation and improved water quality.

In Treatment C (which is no grazing for a period of one year) sediment production would decrease as vegetative cover would not be removed and soil disturbance would not occur. Treatment C involves an average of 119,000 acres annually. It is estimated that an approximately 20 to 30% reduction of sediment production would occur. As was the case for Treatment B, this would aid in improving water quality.

Soil Association D, covering approximately 93,191 acres, is much more erodible than the other associations (TABLES 2-1 and 2). The light colored tuffaceous volcanic material is highly erosive. The very steep slopes have geologic erosion taking place at the present time. However, the erosion on these slopes would not be expected to change as use would not be increased on them and because of their inaccessibility to domestic livestock. Soils on steep slopes (30-60%) could be excessively eroded

even with light grazing. During Treatment A and on some Treatment B areas livestock would be forced onto slopes such as these and increased sediments and overland flow could be expected. Moderate slopes (0-30%) could be affected the same way under the same treatment as the steep slopes. In general the moderate slopes should produce more vegetation and would receive more use than the steeper slopes but should not be as erosive because of the slope and potential ground cover.

Soil Association A, covering approximately 49,853 acres, is the next most erodible soil (TABLES 2-1 and 2) primarily because they are alluvial soils and are therefore not as resistant to erosion, plus they receive runoff from upper slopes. With the greater concentration of use during the grazing Treatment A and B there could be more bank sloughing and as overland flow events occur this sediment would be flushed downstream.

Soil Association C, covering approximately 127,268 acres, is not as erodible as Association D or A because of the surface rock content. On the steep and very steep slopes there is a large amount of talus rock; therefore, very little use is being made because of the slope and rock. There should be no change in sediment loss from these slopes. As Treatment A proceeds on the non-talus areas of the steep and moderate slopes, loss of ground cover could be expected resulting in a small increase in sediment loss.

Sediment loss is of major concern. The loss was estimated by the use of data provided by the U. S. Geological Survey (USGS). TABLE 3-1 lists estimated present weighted average sediment yields by association, and the estimated weighted average sediment yields after fifteen years with the proposed management.

TABLE 3-1

ESTIMATED WEIGHTED AVERAGE SEDIMENT
YIELDS BY SOIL ASSOCIATIONS WITHIN THE CHALLIS UNIT

Soil Assoc.	Square Miles	Present Yield Tons/sq.mi.	Tons/Yr.	Yield in 15 Yrs. With Proposed Actions Tons/sq.mi.	Tons/Yr. 1/
A	77.5	200	15,500	180	13,950
B	72.7	40	2,908	36	2,617
C	194.3	170	33,031	153	29,728
D	144.7	1,200	173,640	1,080	156,276
E	69.2	20	1,384	18	1,246
			226,463		203,817

1/ If predicted yield should decrease especially from soils such as Association D, sodium, potassium, calcium and magnesium content of water in the unit could be lowered.

The concentration of the various chemical parameters which determine water quality in base flows of a stream is dependent on geologic material through and over which it flows and the length of time water is in contact with soluble constituents. Because of this, grazing would not be expected to have much influence on that aspect of water quality unless a change in volume of base flow occurs. However, rising water levels in a stream due to an overland flow event generally result in a high suspended sediment content. Suspended sediment may be the result of channel erosion or sheet and rill erosion from nonchannel sources. There are three modes of transportation of pollutants from land surfaces to water: (1) by overland flow of surface water, (2) by infiltration and percolation to subsurface water, and (3) by wind to surface waters. The pollutant may be dissolved and carried by water, or may be absorbed and tranported with sediment.

Animal concentrations along streams and wet meadow areas have occurred under the present situation and this would not change with the proposal. With the concentration of numbers of animals during Treatments A and B the heavy use of streamside-valley-bottom vegetation would continue. This could result in increased bank caving and thereby increase sediment influx into the stream. The heavily grazed vegetation would not serve as effectively as a filter field to hinder streamside animal wastes from entering the stream. Increased animal wastes would result in increased biochemical oxygen demand and increases in total bacterial counts in the warmer slower moving streams. This increase in sedimentation and bacterial counts would lower water quality.

Areas denuded of annual vegetative growth would be subject to increased erosion from both wind and water until the ground cover becomes comparable to what it was before grazing occurred under either Treatment A or B.

Where rights-of-way are cleared off to mineral soil, such as along fencelines and pipelines, (approximately 120 acres of soils would be disturbed) an increase in overland flow could result. Compaction from equipment tracks or wheels would occur. The magnitude of this impact depends on the type and weight of equipment used and the soil moisture present during their use. If tracks are made during wet soil moisture conditions they may become channels for increased overland flow resulting in an associated increase in velocity and erosion potential. As a result of this increase, erosion and sedimentation could increase during the time the area was bare. This disturbed acreage is not concentrated in one location, so no significant increases in sedimentation as a result of clearing are predicted to occur.

Water developments (approximately five) on Soil Association D would result in increased sediment production because of increased animal use and surface disturbance. Water developments in areas of steep banks or sidehills would also increase erosion as a result of the associated increase in animal concentration and the caving of banks. Soil associations A, B, and C are not susceptible to this degree.

Land treatment projects involving 2,200 acres all have a potential to increase erosion due to the reduction of ground protection until they become revegetated. They would be more vulnerable to both wind and water erosion for a short time, but would attain a higher percentage

of total ground cover for better soil protection with time (approximately two to three years).

Specific

Impacts on soil and water resources are contingent on susceptibility of a land surface to erosion and the occurrence of precipitation to produce overland flow. Severity of impacts are dependent on the intensity and duration of overland flow.

All impacts are related to use being made on the allotments. In TABLE 3-2 present use and proposed use are listed for allotments. The table also shows the present available AUMs and the potentially available AUMs. The potentially available AUMs is what the soils are capable of producing and would be available for livestock, wildlife, or wild horses.

With the combined use of livestock, wild horses and wildlife on the Red Lake Allotment, it is doubtful that current soil loss and sedimentation occurring from this allotment would improve. Estimated current sediment yield from the allotment is as follows:

Soil Assoc.	Acreage	Total Sediment Yield Tons/Yr.
A	1,514	473
B	9,596	600
C	5,098	1,354
D	8,184	15,345
E	940	30
	Total	17,802

TABLE 3-2
PRESENT AND PROPOSED USE BY ALLOTMENTS IN THE CHALLIS UNIT

Allotment	PRESENT USE: 6 Yr. Avg. Livestock Use AUMs	Wildhorse Use AUMs	Wildlife Use AUMs	Total Obligated AUMs	Range Survey 1/ AUMs	Present 2/ Available AUMs	POTENTIAL: Potential Available Production AUMs	PROPOSED USE: Livestock Use AUMs	Wildhorse Use AUMs	Wildlife 5/ Use AUMs	Total Use AUMs
Red Lake	1,092	1,046	799	2,937	1,243	1,006	3,929	1,395	765	799	2,959
Herd Creek	1,222		462	1,684	3,469 3/	1,848	4,918	1,035		462	1,497
Road Creek	582	431	482	1,495	838	1,004	3,412	614	315	482	1,411
Bruno Creek	125		115	240	120	8	45	67		115	182
Round Valley	373		281	654	603	1,403	3,298	602		281	883
San Felipe	3,287	1,415	994	5,696	3,735	5,316	12,307	3,387	1,035	994	5,416
Warm Springs	7,382	2,460	2,832	12,674	9,370	11,367	26,790	9,580	1,800	2,832	14,212
Garden Creek	930		697	1,627	1,117	2,287	7,011	907		697	1,604
Bald Mountain	617		577	1,194	1,029	1,084	3,331	660		577	1,237
Thompson Creek	140		222	362	178	196	426	9		222	231
Split Hoof	186	554	410	1,150	429	733	1,555	282	405	410	1,097
Squaw Creek	468		233	701	350	573	1,377	364		233	597
Spud Creek	250		448	698	291	523	1,305	265		448	713
Pine Creek	181		144	325	225	447	1,005	185		144	329
East Fork	503		589	1,092	630	1,925	2,853	433		589	1,022
Sullivan Creek	88		86	174	147	122	648	104		86	190
Total	17,426	5,906 4/	9,371	32,703	20,305	29,842	74,210	19,889	4,320 6/	9,371	33,580 6/

1/ AUMs by range survey made in 1951 and 1957. Livestock AUMs only.

2/ Range site and condition survey compilation using present available information in 1975. Total forage available for all animals.

3/ Forest Service is included. This is not included in total at bottom of page.

4/ 246 AUMs use in Malm Gulch is not added in.

5/ Wildlife use assumed to be same as at present.

6/ Propose use for wildlife adds 13,691 AUMs in this table. Horses using Malm Gulch comprise 180 AUMs of the 13,691 AUM total.

Assuming that the present AUM production figures are correct, the proposed use would be approximately three times the present production. Therefore, a reduction in ground cover and an increase in surface disturbance would occur resulting in an increase in overland flow and sediment production. This would reduce the productive capacity of the soil as well as decrease water quality. In actuality, this three-fold increase in use would occur on only two-thirds of the area each year, thereby increasing the magnitude and intensity of the potential impacts described above. Even though one-third of the area would be rested from livestock grazing, wild horses and wildlife use would be occurring in the rested portion. Vegetative recovery under this treatment would be difficult. Proposed allotments that would be slow to improve due to the proposed livestock, wild horse and wildlife use are San Felipe/ Peck Canyon, Warm Springs, Split Hoof, North Garden Creek (Jeff's Creek pasture), Squaw Creek, Spud Creek, Sullivan Creek and Road Creek. Therefore, soil compaction, sediment loss and water quality probably would not improve until about the end of the third grazing cycle (approximately nine years).

The Penal Gulch pasture (4,660 acres) in the Round Valley Allotment is comprised mostly of Soil Association D which are very erosive soils (1,200 tons/sq. mile/year). When the increased numbers (520 cattle, 154 sheep) of livestock are turned into the pasture during Treatment A, increased overland flow and sediment yield would occur. This increased flow and sediment yield would reach the Salmon River, resulting in a lowering of water quality.

There are areas where increases in overland flow and/or animal waste entering the streams are likely to occur during a given year of

the proposed action. These increases would possibly result in decreased water quality. The areas and the years in which this could occur are as follows:

During Year 2 of the plan of implementation, adverse water quality impacts would probably occur in Bear Creek and Mosquito Creek as the result of Treatment A being applied to the majority of the watershed area (7,296 acres) in the Bear Creek pasture of San Felipe/Peck Canyon Allotment. If a high intensity storm occurs (probability of one-in-five years) there would be an increase in overland flow, sediment production and turbidity of the stream as well as increased animal waste entering the streams. This would be due to the expected degree of utilization of forage and surface disturbance from the increased numbers of animals within that pasture.

During Year 2, increased animal wastes could be expected in Horse Basin Creek because of the use during Treatment B of the Horse Basin pasture (13,303 acres) of San Felipe/Peck Canyon Allotment. Influences on water quality resulting from increased animal waste would be attributed to increased biochemical oxygen demand and increased bacterial counts.

During Year 3 of the plan of implementation, water quality impacts from increased animal wastes would likely occur in Bear Creek and Mosquito Creek of San Felipe/Peck Canyon Allotment because of the Treatment B in Bear Creek pasture.

Jeff's Creek pasture (4,618 acres) in the North Garden Creek Allotment would likely have increased suspended sediments, for short periods following overland flow events because of the degree of utilization (179

AUMs present compared to 374 proposed) expected to result from Treatment A within that pasture.

Increased sediment could be expected from the intermittent Spar Canyon drainage during overland flow producing events, should they occur (chance of one-in-five years) because of the increased animals (1,975 AUMs compared to 325 AUMs) expected utilization of Spar Canyon pasture (19,442 acres) of Warm Springs Allotment. This pasture encompasses the majority of the Spar Canyon Watershed area and includes 14,258 acres of Soil Association D with a sediment yield of 26,734 tons per year.

During Year 4 of the plan of implementation, accelerated water quality impacts are likely to occur in the Sand Hollow area, Corral Basin and Upper Road Creek drainages.

Increased sediment production would be a distinct possibility from Sand Hollow drainage into Road Creek because of Treatment A and the wild horse use on Ziegler Basin pasture (7,880 acres) of Road Creek Allotment and the fragile soils within that area (4,792 acres of Association D with a sediment yield of 8,985 tons per year).

Corral Basin pasture would be receiving Treatment B during this year and total bacterial count would likely rise in Road Creek due to the intensity of use (2,324 AUMs compared to 750 AUMs) using the pasture.

The bulk of Horse Basin drainage (13,303 acres) in the San Felipe/ Peck Canyon Allotment would be receiving Treatment A during Year 4. As a result, increased sediments would likely occur, as may increased animal wastes. Total bacterial counts could also increase during this treatment.

Increase in cattle numbers (1,813 AUMs compared to 413 AUMs) during Year 4 in Road Creek pasture (6,848 acres) of San Felipe/ Peck Canyon Allotment could result in increased animal wastes entering the small Road Creek stream. This could increase BOD and add to a higher total bacterial count as well as fecal coliform, lowering the water quality.

Use over the bulk of the Road Creek Watershed (6,848 acres) during this year could increase sediment and animal wastes thereby lowering the water quality of the entire stream.

Year 5 of the plan of implementation would have the same specific area impacts as shown during Year 2. However, the magnitude of each impact should be less than during Year 2 because of the expected increase in total ground cover and the increased availability of forage within this cycle.

Projects

The burning project (600 acres) in the East Fork Allotment could add increased nutrients to Corral Creek and Jimmy Smith Lake from increased overland flow as a result of loss of vegetative cover. This could also add increased sediment to the creek and lake until the area is revegetated, (approximately three to five years). This would impact water quality by lowering it and aquatic life.

The spraying project (1,000 acres) in the Bald Mountain Allotment could have an impact on the soil and water resources. Those broadleaf plants which are susceptible to 2,4-D at the time of the treatment would be killed. This could result in a short-term increased soil exposure (approximately one to two years) until the dead plant parts fall and

become a part of the total ground cover during the revegetation process. Overland flow would increase, resulting in an increase of sediment yield which could have an impact on water quality (decrease in quality) and aquatic life.

The chaining project (600 acres) in the Road Creek Allotment could add increased sediments to Chicken Creek from increased overland flow as a result of loss of vegetative cover and soil disturbance. This would add increased sediment to the creek until the area is revegetated (approximately two to three years) and would adversely affect water quality.

The proposed one-fourth mile stock trail for the Spud Creek Allotment would provide easier access and more frequent use of the Salmon River and out to grazing areas again. This could result in added animal wastes and increased sediment to the Salmon River, which would have an impact on water quality.

Summary

Implementation of the grazing systems would result in some cases in increased total ground cover (both living and dead plant material) within fifteen years. In other cases, the estimated fifteen year increased production would probably not be attained within fifteen years. Where there is increase in ground cover, there would be less overland flow as a result of either spring snowmelt or summer thunderstorm activity.

With the additional plant litter accumulating on or near the soil surface, there should be an increase in organic matter content, a better soil microbial environment and therefore, better tilth and soil structure.

This should result in increased infiltration rates, and minimal soil compaction from both animals and rainfall.

With increased infiltration rates, a rise in available soil moisture should result in more plants or larger plants. This should further aid in reducing overland flow and sediment production from sheet and streambank erosion because of the increased ground cover.

Total reduction in sediment production expected over the time frame of the proposal (15 years) is shown in TABLE 3-1.

With increased volume of forage, especially adjacent to the streams, serving as a natural filter field, the amount of sediments and animal wastes reaching the live streams should be reduced. This, in conjunction with streambanks becoming vegetated instead of occurring as bare soil, may also lower the bacterial count of low flow during late summer periods on the small streams.

Because water quality is presently good in the unit no changes as a result of the proposed action are predicted for concentration of dissolved solids. In respect to suspended sediments, it is projected that improved vegetative cover would lessen suspended sediment concentrations during peak flow conditions.

General

Impacts on vegetation result from trampling damage and use of plants by grazing animals in a manner which (1) interferes with the plants' ability to complete normal life processes, viz., maintain health and vigor, produce seed and reproduce themselves; or (2) allows plants to complete all or most of their normal life processes.

Impacts on vegetation vary depending upon the number and kind of animals grazed, the length of time and season they are allowed to graze, and how they are distributed on the range. In general, plants are most severely impacted when grazed during the spring growing period. This is when plants draw heavily from carbohydrate root reserves to initiate growth and produce new vegetative shoots. After initial growth has produced considerable leaf area, carbohydrates are synthesized in excess of growth requirements. The plant then begins to store the excess. Carbohydrate reserves are lowest for most plants when they are growing most rapidly. Grazing or removal of green, leafy material at this time is most harmful because the plants must again draw on root reserves to produce photosynthetic material. Additional grazing or removal of plant material during the growing season results in additional withdrawal of root reserves. This reduces the capacity of the plant to produce both shoot and root growth the following year. If this continues, plants are seriously weakened and eventually die.

Grazing when plants are in the process of flowering and developing seed limits seed production and new seedlings the following year.

Grazing when new seedlings are becoming established results in detrimental impacts from trampling and pullup. Young seedlings are pulled up when grazed in the early spring before they have had the opportunity to develop adventitious roots which help anchor the plant to the soil. Some vegetation may be physically damaged or destroyed by trampling. Also, livestock trampling results in soil compaction which restricts vegetative root growth and reduces infiltration of water for plant growth.

Livestock not only impact vegetation directly but also indirectly by removing plant material which would otherwise improve environmental conditions for plant growth. Unused plant material is ultimately deposited on the ground as litter. Litter helps protect the soil, reduces surface temperatures, increases water infiltration, adds organic matter, and improves soil fertility.

Impacts to vegetation that could be expected under the proposed grazing systems are discussed as follows:

Three Pasture Grazing System

With the proposal approximately 239,611 acres would be covered with three pasture grazing systems. This includes state and private lands as well as national resource land and consists of approximately 67% of the total acreage within the Challis Unit.

Following are the allotments, acreage in each allotment, proposed AUMs of livestock use and the key vegetative species to be improved with the use of three pasture grazing systems.

Allotment	Acreage	Proposed AUMs	Key Vegetative Species
Red Lake	25,332	1,395	Winter fat, Indian ricegrass, Bluebunch wheatgrass
Herd Creek	24,668	1,035	Bluebunch wheatgrass, Sandberg bluegrass
Road Creek	16,094	614	Bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, Indian ricegrass, June grass
Bruno Creek	2,453	67	Bluebunch wheatgrass, Idaho fescue
Round Valley	13,583	602	Indian ricegrass, Bluebunch wheatgrass, Squirreltail, Wild rye, Sand dropseed
San Felipe/ Peck Canyon	30,007	3,387	Bluebunch wheatgrass, Idaho fescue, Crested wheatgrass
Warm Springs	109,141	9,580	Indian ricegrass, Winter fat, Bluebunch wheatgrass, Idaho fescue
Garden Creek	18,333	712	Indian ricegrass, Bluebunch wheatgrass, Wild rye
Total	239,611	17,392	

The seasonal growth and development of most grasses, forbs and woody plants is similar. Plants most preferred by livestock such as Bluebunch wheatgrass, Indian ricegrass, winter fat and Idaho fescue are readily sought out and utilized year after year under continuous grazing use. In the past, these plants have seldom had the opportunity to store adequate root reserves and maintain their health and vigor. The three

pasture grazing system allows these plants (most key species and other palatable plants with similar growth requirements), an opportunity to complete their normal life processes two out of every three years. This allows them to store root reserves, regain their health and vigor and produce seed. Desirable plants are, therefore, better able to compete with the less palatable and undesirable plants for livestock use such as sagebrush, rabbitbrush and snakeweed. (Undesirable plants are normally not grazed or grazed only slightly by cattle under continuous grazing use practices.)

Grazing by livestock when seed of the key species is ripe helps shatter and trample the seed into the ground and results in more reproduction of these plants.

Rest from grazing the following year allows seedlings to become established and results in greater herbage yield, more litter accumulation, and less soil compaction associated with livestock trampling.

Concentrating livestock use in one pasture results in a greater distribution of grazing use and more uniform utilization. This forces utilization of less desirable vegetation as well as use of plants on previously ungrazed or lightly grazed areas. This results in utilization of plants that would not otherwise be grazed. The less desirable plants, therefore, share the grazing load and have a less competitive advantage. Undesirable plants are not normally grazed under continuous grazing use practices; therefore, they would only be adversely affected to the extent grazing use is forced on these plants due to concentrating livestock use. A reduction in the amount of seedlings of the undesirable plants would occur due to the increased opportunity for desirable plants

to produce seedlings and occupy the available space. After completing the initial grazing cycle (the first three years the grazing system is in effect), beneficial impacts to key livestock plant species should become more pronounced. Livestock then begin grazing in the pasture that was rested the previous year. Old growth vegetation, as well as current year's growth and increased vigor of these plants, together with some additional plants should provide more total herbage volume. As a result, the degree of utilization on plants grazed should not be as severe during the grazing treatments. This would result in more storage of carbohydrate reserves and a further increase in vigor and basal area of the key species. As vigor and production of the palatable plants improve, they would constitute a greater percent of the plant composition and available forage.

As time progresses, increased vigor of the key species should result in further increases in seed production, litter accumulation, better soil conditions for seedling establishment, and more seedlings. This should result in an increase in the density and ground cover of the key species and other plants with similar growth requirements, as well as their relative composition in the stand. The less desirable and unpalatable plants would be affected less because they would either not be grazed or grazed less severely.

Two Pasture Grazing Systems

Two Pasture Deferred Rotation. With the proposal approximately 59,268 acres would be covered with two pasture deferred rotation grazing systems. This is approximately 17% of the total area in the Challis

Unit. Following are the allotments, acreage in each, proposed AUMs livestock use, and the key vegetative species which would be improved with this kind of grazing system.

Allotment	Acreage	Proposed AUMs	Key Vegetative Species
North Garden Creek	12,915	187	Above 6,000 feet elevation, Bluebunch wheatgrass, Idaho fescue
(Hillside Area)	390	8	Below 6,000 feet elevation, Indian ricegrass, Bluebunch wheatgrass, Wild rye
East Fork (Big Lake Pasture only)	5,712	190	Bluebunch wheatgrass, Big sagebrush
Bald Mountain	24,761	660	Bluebunch wheatgrass, Idaho fescue, Indian ricegrass, Needle and thread grass, Big sagebrush
Thompson Creek	5,835	9	None listed in AMP
Split Hoof	9,655	282	Bluebunch wheatgrass, Indian ricegrass
Total	59,268	1,336	

This grazing system would allow key species and other desirable plants for livestock use an opportunity to complete their normal life processes every other year. (The less desirable and unpalatable plants would not be affected appreciably because under continuous grazing practices, they would either be not grazed or grazed less severely, enabling them to complete normal growth processes every year.) Rest during the growing season every other year allows desirable plants an opportunity to store root reserves, regain health and vigor, and produce seed. Desirable

plants would, therefore, be better able to compete with the less palatable and undesirable plants. Rest from grazing during the growing season would result in increased total herbage yield, slightly more litter accumulation, and less soil compaction. Grazing by livestock when seed of the key species is ripe would help shatter and trample the seed into the ground. This should result in some seedling establishment the following spring. Grazing use, however, would occur in the same pasture used the previous fall; therefore, rest would not be provided for seedling establishment. Under this system, old growth forage would not be present for use in the spring. Livestock would have to satisfy forage requirements by using current year's growth of existing plants. This would result in use of these plants, about the same as occurs under present continuous grazing practices. This would insure a reduction in storage of carbohydrate root reserves and decreased plant vigor of the desirable plants.

Overall benefits to vegetation would result from this system by providing rest during the growing season every other year. The same benefits would occur as under a three pasture system, however, at a slower rate, i.e., grazing would occur every other vs. every third year. Slower improvement would result from less rest during the growing season, no rest for seedling establishment, and a less rapid increase in herbage volume due to grazing the existing forage every year.

Two Pasture Rest Rotation. Under the proposal, approximately 31,828 acres would be covered with two pasture rest rotation systems. This is approximately 9% of the total area in the Challis Unit. Following are the allotments, acreage in each allotment, proposed AUMs livestock

use, and the key vegetative species that are to be improved with this kind of grazing system.

Allotment	Acreage	Proposed AUMs	Key Vegetative Species
Squaw Creek	8,820	364	Bluebunch wheatgrass, Idaho fescue, all sagebrush species
Spud Creek	9,426	265	Bluebunch wheatgrass, Big sagebrush will be monitored
Pine Creek	4,294	185	Bluebunch wheatgrass, Big sagebrush
East Fork	9,288	243	Bluebunch wheatgrass, Big sagebrush
Total	31,828	1,057	

The same benefits would result from this system as from the two pasture deferred rotation system with the following exceptions:

Livestock would not move into a pasture at seedripe time which was rested during the growing season. Therefore, livestock would not help shatter and trample seed into the ground and fewer new plants would be produced. This would result in a slower increase in the relative abundance of the desirable plants and slower improvement in the vegetative condition. Rest the year following grazing, however, would allow any seedlings trampled into the ground during the previous treatment to become established.

Under this system, all grazing use would be concentrated in one pasture the entire year. This would increase soil compaction and reduce available water for plant growth, but result in a less competitive advantage for undesirable plants.

Concentrating livestock use forces utilization of the less desirable plants for livestock use such as sagebrush, rabbitbrush and other invader species. This interferes with the normal life processes of these plants and would also result in reduced plant vigor, less seed produced, and fewer seedlings established. The undesirable plants would, therefore, be affected by grazing as well as the desirable plants. This reduces the ability of the undesirable plants to compete with the desirable plants for available space, water, nutrients and sunlight.

Also, the key species and other desirable plants for livestock use would have an increased opportunity to complete their normal life processes, improve in vigor, produce seed and new plants. Rest season-long one out of two years would allow all plants to complete their normal life processes, reduce soil compaction, increase herbage volume and litter accumulation, and allow livestock to begin grazing in a pasture that was rested the previous year. This would result in more use of old growth forage, less use of the current year's growth and a better opportunity for desirable plants to store carbohydrate reserves and increase vigor. Rest season-long would not materially affect undesirable plant species. Normally, under continuous grazing use practices, these plants would either not be grazed or grazed less severely than the desirable plants.

Overall benefits from this system would result to the key species and other desirable plants from providing rest during the growing season every other year. The same benefits would occur as under the three pasture system, except at a slower rate. Slower improvement would occur due to less rest being provided during the growing season, no trampling

of seed in the pasture rested from grazing until seedripe time, resulting in less seedling establishment and a less rapid increase in herbage volume.

Four Pasture Grazing System (San Felipe/Peck Canyon)

Approximately 11,328 acres are included in this grazing system, or about 3% of the total area in the Challis Unit. The key vegetative species are Crested wheatgrass, Bluebunch wheatgrass and Indian ricegrass.

With this system, grazing during Treatment A would result in forage utilization until flowering time. Some regrowth could occur after this treatment if sufficient moisture remains in the soil or summer rains occur.

The following year, complete rest through the growing season would allow plants to complete their normal growth cycle, store root reserves, regain vigor, and produce seed. Grazing in the fall would help trample any seed present into the ground. Some seedling establishment could occur the following year; however, grazing during the spring Treatment C would be harmful to seedlings. Seedlings would be subject to trampling damage and pullup during this period. Grazing during the previous fall would reduce the amount of old growth forage that would be available for use the following spring.

Without additional old growth forage remaining from the previous year, livestock would have to satisfy forage requirements by using current year's growth of existing plants. This would result in more use of the desirable plants and less carbohydrate root reserve storage. More use of the undesirable or less desirable plants would also occur

during this treatment than would occur under present continuous grazing use practices. This would result in a decrease in carbohydrate root reserve storage and vigor of those plants.

Season-long rest during Treatment D would allow all plants to complete their normal growth processes, permit maximum production of herbage volume and litter accumulation, and permit recovery from the harmful effects of trampling and soil compaction during the previous treatments. Rest during this period would allow livestock to begin grazing every year in the pasture that was rested the previous year. Old growth forage, together with the current year's growth, would provide more forage volume as well as a better mixture of carbohydrates and protein for consumption by livestock and other grazing animals.

Grazing the old growth forage would lessen use on the current year's growth of the existing plants. The desirable plants would, therefore, have more opportunity to store root reserves and increase in vigor. Undesirable or less desirable plants could also increase in vigor, although to a lesser extent than the desirable plants. Undesirable plants are not as adversely affected by livestock as desirable plants; therefore, the opportunity for improvement would be less.

It is expected the following changes will occur in the different vegetative types due to implementation of the proposal.

Vegetative Types

Sagebrush Type. In the short term (five years), the general aspect or the size of the type would not change. A slight change in vegetation composition would occur, however, with some increase in the number of

new plants of the more desirable forage species such as Bluebunch wheatgrass, Idaho fescue and Indian ricegrass. There would be an improvement in vigor of these plants which would result in larger plant basal areas and an increase in the amount of herbage volume produced. The quantity of undesirable plants such as sagebrush, rabbitbrush and snakeweed would not change appreciably. Reproduction of these plants would not continue as rapidly as at present, as they would produce slightly less seed and the available space would be increasingly taken up with seedlings of the more desirable plants.

Over the long term (fifteen years), size of the sagebrush type would not change appreciably unless acted upon by external forces such as fire. The general aspect of the type would change from the present overall sagebrush appearance to one showing an intermixture of sagebrush and grass. Quantity of the desirable key plant species would be increased considerably over what it is at present. Most of the undesirable plants would continue to be present in the stand; however, vigor of these plants would be decreased somewhat due to the increased competition from the more desirable plants. There may be areas where sagebrush would be dying due to aroza moth infestations or other diseases. This has occurred in other sagebrush areas when it appeared vigor of the sagebrush plants had been reduced due to competition from other plants. Reduction of sagebrush plants would reduce competition for soil moisture which would be available for other plants.

Grass Type. The general grass type in the short term (five years) would remain about the same size as present. Additional grass plants would be present in some areas. In areas where water would continue to limit grazing use, vegetation would not change. There would be general

improvement in the areas now being grazed. This would be reflected in improved vigor of the existing desirable plants and an increase in the number of young plants. The quantity of undesirable plants would not change significantly. Reproduction of these plants would not occur as rapidly as at present since the available space would be increasingly occupied with seedlings of the more desirable plants.

After fifteen years, the size of the grass type would be about the same as at present. In all areas except those not now being grazed, (Malm Gulch and inaccessible areas) there would be a general increase in numbers and relative composition of the desirable grasses and shrubs such as Indian ricegrass, stipa whitesage and budsage. There would be an increase in the number of stipa plants in the poa stipa association and the carex islands would be slightly larger and increasing in size. Vigor of the desirable grasses and shrubs would be much improved over what it is and present and available space would be occupied with a greater number of seedlings of the desirable plants. Most undesirable plants for livestock use such as sagebrush, rabbitbrush and snakeweed would continue to be present; however, the abundance of new seedlings would be much less than at present. Vigor of the undesirable plants may be less than at present due to the increased competition from the more desirable plants.

Shadscale Type. The shadscale vegetative type in the short term (five years) would not change appreciably in size. Some slight changes in vegetation composition would be occurring as indicated by the increase in the number of new young plants of the desirable forage species such as Squirreltail and Indian ricegrass. Very few new plants of whitesage

or budsage would be present, but vigor of the existing plants of these species would be improved. There would be little discernible change in the number of new shadscale plants; however, there would be a slight improvement in vigor of these plants. There would be little change in the undesirable species such as red three awn grass, rabbitbrush, horsebrush and sagebrush.

Due to the general low production potential of this type, significant changes in vegetation would not be likely to become evident within a five-year period.

There would be little change in the size of the shadscale type over the fifteen-year period. The type is associated closely with existing calcareous soils with a high pH. There would be some changes in vegetative composition evidenced by increased numbers of new seedlings of desirable plants such as budsage, whitesage, Indian ricegrass and Squirreltail. This would be most evident near the ranches at the extreme valley bottoms where the heaviest grazing use is now occurring. Vigor of the desirable plant species would be much improved over what it is at present. It is not expected that the number of undesirable plants will change significantly. Reproduction of existing undesirable plants would be less due to increased competition from the desirable plants.

Coniferous Type. The size or vegetation composition of the coniferous type is not expected to change appreciably in five years or in fifteen years under the proposal. Some slight deterioration from present conditions may occur near the timber edges due to additional use of these areas by livestock for shade and rest. This could result in a slight loss in vigor and reproduction in the Bluebunch wheatgrass and Idaho fescue plant species.

Specific

During Treatment A for the short term the proposed action would be adverse to vegetation in all pastures in the unit except the following:

Thompson Creek Allotment (entire allotment)

North Garden Creek Allotment - Klug Gulch Pasture

East Fork Allotment - Marco Pasture

Herd Creek Allotment - Pine Gulch Pasture

Bruno Creek Allotment (entire allotment)

For pastures in which Treatment A would occur, the impact of spring grazing would impair ability of vegetation to attain potential production. For example, Treatment A in Red Lake would impair production of and deplete carbohydrate reserves, plant vigor, seed production, and seedling establishment (Appendix 3A).

In addition to all pastures except the above, for the short term Treatment C (same as Treatment A for three pasture systems) would be adverse for the reasons stated above in all pastures of the San Felipe/ Peck Canyon four pasture system. Treatment B would be adverse in the short term in Warm Springs III pastures of Spring Basin, Broken Wagon and Corral Basin (Appendix 3A).

Overall proposed management would also be adverse in the short term to vegetation in the Sheep Creek pasture of Warm Springs II and in Spring Basin, Broken Wagon and Corral Basin pastures of Warm Springs III. There would be long term adverse impacts in Warm Springs III attributable to management practices resulting in less production potential being achieved after fifteen years. A reduction of 1,075 AUMs is predicted (Column 2, TABLE 3-3).

TABLE 3-3

AUM PRODUCTION, ALLOCATION, AND PREDICTED NET SURPLUS AT THE END OF FIVE AND FIFTEEN YEARS SHOULD THE PROPOSAL BE IMPLEMENTED

Allotment	(1) Estimated Present AUM Production	(2) Estimated AUMs to be Achieved by Management After 15 Yrs.	(3) Estimated AUMs to be Achieved by Improvement After 15 Yrs.	(4) 1/ Total AUM Production After 15 Yrs.	(5) Proposed AUMs for Wild Horses	(6) 2/ Present AUMs for Wildlife	(7) 3/ Proposed AUMs for Livestock	(8) 4/ Total AUMs Proposed & Committed	(9) 6/ Net AUM Difference After 5 Yrs.	(10) 7/ Net AUM Difference After 15 Yrs.
Red Lake	1,006	2,192	0	3,198	765	799	1,395	2,959	40	239
Herd Creek	1,848	1,934	0	3,782		462	1,035	1,497	381	2,285
Road Creek	1,004	650	96	1,750	315	482	614	1,411	57	339
Bruno Creek	8	29	0	37		115	67	182	-24	-145
Round Valley	1,403	1,364	0	2,767		281	602	883	314	1,884
San Felipe/Peck Canyon										
3 Pasture	3,239	2,744	0	5,983	1,035	734	2,747	4,516	245	1,467
4 Pasture	2,077	653	0	2,730		260	640	900	305	1,830
Warm Springs										
Area I	3,858	248	0	4,106		1,411	3,234	4,645	-90	-539
Area II	2,804	989	0	3,793	900	1,273	3,225	5,398	-268	-1,605
Area III	4,705	-1,075	0	3,630	900	148	3,121	4,169	-90	-539
Garden Creek										
North	708	1,272	0	1,980		203	187	390	266	1,590
South	1,551	1,222	0	2,773		475	712	1,187	265	1,586
Hillside	28	18	0	46		19	8	27	3	19
Bald Mountain	1,084	1,281	103	2,468		577	660	1,237	206	1,231
Thompson Creek	196	131	0	327		222	9	231	16	96
Split Hoof	733	345	0	1,078	405	410	282	1,097	-3	-19
Squaw Creek	573	434	0	1,007		233	364	597	68	410
Spud Creek	523	446	0	969		448	265	713	43	256
Pine Creek	447	268	0	715		144	185	329	64	386
East Fork	1,925	473	62	2,460		589	433	1,022	240	1,438
Sullivan Creek	122	205	0	327		86	104	190	23	137
Total	29,842	15,823	261	45,926	4,320	9,371	19,889	33,580 5/	2,062	12,346

1/ Entries in Columns 1 + 2 + 3 = Entries in 4.

2/ Based on present numbers of wildlife.

3/ AUMs Proposed in AMPs.

4/ Column 8 = Columns 5 + 6 + 7

5/ Does not include 180 AUM horse use in Malm Gulch (TABLE 1-3).

6/ Column 9 = .167 Column 10.

7/ Column 10 = Column 4 - Column 8.

For column (2) estimates were obtained by subtracting estimated present production (column (1)) from total potential production (last column in TABLE 3-4) and multiplying the difference realizable from cumulative effects of management in fifteen years (last column in TABLE 3-5).

For example, the estimated present AUM production for Red Lake is 1,006 and the total production potential (TABLE 3-4) is 3,929. The percentage of potential which could be achieved by management is 75 (last column in TABLE 3-5). The column (2) entry (2,192 AUMs) in TABLE 3-3 is obtained by subtracting 1,006 from 3,929 and multiplying by 75%. Column (4) estimates were derived by subtracting AUM grazing capacities of treated areas from capacities prior to treatment as indicated in the following table.

Allotment	Acres To Be Treated	Estimated Present Grazing Capacity		Estimated Grazing Capacity After Treatment (15 yrs.)		Difference
		Acres per AUM	AUMs	Acres per AUM	AUMs	
Road Creek	600	25	24	5	120	96
Bald Mountain	600	25	24	7	86	62
East Fork	1,000	25	40	7	143	103
Total	2,200		88		349	261

TABLE 3-4

ESTIMATED PRESENT AND POTENTIAL PRODUCTION
POTENTIAL (AUMs) BY VEGETATIVE TYPE FOR EACH ALLOTMENT

Allotment	Grass			Sagebrush			Shadscale			Wet Meadow			Mountain Mahogany			Total Potential AUM Production
	Acres	Production AUMs	Potential Production AUMs	Acres	Production AUMs	Potential Production AUMs	Acres	Production AUMs	Potential Production AUMs	Acres	Production AUMs	Potential Production AUMs	Acres	Production AUMs	Potential Production AUMs	
Red Lake	346	28	93	15750	947	3749	400	31	87							3929
Herd Creek	1184	192	384	16080	1636	4499	-	-	-	544	20	35				4918
Road Creek	-	-	-	13772	984	3372	-		-	32	20	40				3412
Bruno Creek	-	-	-	274	8	45										45
Round Valley																
No. Round Valley				2640	63	454	1632	104	463							917
So. Round Valley	523	79	158	1456	173	400	6633	984	1969							2527
Hillside Area	-	-	-	224	28	64										64
San Felipe-3 Pasture	3136	361	981	17303	1828	4778	-	-	-	1568	1003	1960	288	47	94	7813
San Felipe-4 Pasture	2720	680	1360	6448	1021	2383	-	-	-	160	100	200	1792	276	551	4494
Warm Springs Area I	15334	2370	4541	9968	1014	2580	4976	474	1088							8209
Warm Springs Area II	6232	492	1841	28544	2270	7662				146	31	183	80	11	11	9697
Warm Springs Area III	6028	1129	2443	25044	2892	5557	-	-	-	416	352	520	1328	332	664	9184
No. Garden Creek	698	105	209	10854	583	3030	600	20	120							3359
So. Garden Creek.	330	40	81	13560	1509	3503	30	2	4							3588
Bald Mountain	208	7	43	15209	1077	3288										3331
Thompson Creek	-	-	-	1499	196	426										426
Split Hoof	592	65	140	5463	668	1415										1555
Squaw Creek	48	6	12	5844	567	1365										1377
Spud Creek	96	4	25	7058	519	1280										1305
Pine Creek	-	-	-	3590	367	645	-	-	-	128	80	160				805
East Fork	-	-	-	11016	1925	2853										2853
Sullivan Creek	-	-	-	3575	122	648										648
Totals	37500	5558	12311	215169	20397	53996	14271	1615	3731	2994	1606	3098	3488	666	1320	74456

Overall, after fifteen years it is predicted that there would be a net increase of 12,346 AUMs in the unit. Management approaches including improvements would increase production by 16,084 AUMs or approximately 54%. Production in the Red Lake Allotment to be achieved by management exclusive of improvements would be increased by 75% (TABLE 3-5) which is greater than for the other areas. In Warm Springs III, production would be decreased 24%. The average AUM increase for all areas would be 48%.

Additional AUMs of vegetative production realized from the proposed action would provide more protective cover for watershed, food and habitat for wildlife and wild horses, additional forage for domestic livestock, and more streamside vegetation for fish habitat.

With implementation of AMPs, some areas defined in Chapter 1 would be periodically rested from grazing use. At the same time, livestock would be concentrated in other areas. It is expected this situation would cause antelope and wild horses to move from areas where livestock are concentrated to the rested areas.

It is assumed deer, elk and bighorn sheep would not create additional impacts on vegetation in the rested pastures due to their ranging characteristics and habitat requirements.

Any additional use by antelope and wild horses in the areas scheduled for rest would interfere slightly with the ability of plants to complete their normal growth process, i.e., store carbohydrate root reserves and produce seed. Total beneficial effects to both the desirable and undesirable plants that would normally occur, therefore, could not be fully realized. Sequence of use of rested pastures by these animals would be unknown. However, it is predicted that the impacts would not markedly alter plant responses to the proposed grazing systems.

TABLE 3-5

OVERALL LONG TERM EFFECTS WHICH
WOULD BE ACHIEVED BY PROPOSED GRAZING PROGRAM

Allotment	Palatable Plants								Unpalatable Plants								
	CARBOHYDRATE RESERVES AND PLANT VIGOR 1/	SEED PRODUCED	SEED SHATTERING AND TRAMPLING	SEEDLING ESTABLISHMENT	LITTER ACCUMULATION Soil Fertility/Plant Growth	CONCENTRATING LIVESTOCK Plants Affected	SOIL COMPACTION Trampling	NUMERICAL RATING 2/	CARBOHYDRATE RESERVES AND PLANT VIGOR	SEED PRODUCED	SEED SHATTERING AND TRAMPLING	SEEDLING ESTABLISHMENT	LITTER ACCUMULATION Soil Fertility/Plant Growth	CONCENTRATING LIVESTOCK Plants Affected	SOIL COMPACTION Trampling	NUMERICAL RATING	PERCENTAGE OF PRODUCTION POTENTIAL WHICH WOULD BE ACHIEVED BY MANAGEMENT AFTER 15 YEARS 3/
Red Lake	B	B	B	B+	B+	B-	B+	48	B-	B-	B-	B-	B+	A-	B+	27	75
Herd Creek	B+	B+	B+	B+	B	B+	B-	54	B-	B-	B-	B-	B-	A+	B-	9	63
Road Creek	B+	B+	B+	B+	A	B+	A	33	B-	B-	B-	B-	A-	A+	A	-6	27
Bruno Creek	B+	B+	B+	B+	B+	N	B+	54	B-	B-	B-	B-	B-	N	B+	24	78
Round Valley Alt. B	B+	B+	B+	B+	B	B	B	54	B-	B-	B-	B-	B	A	B	18	72
San Felipe (3 past.)	B+	B+	B	B+	B	B	B-	48	B-	B-	N	B-	B	A	B-	12	60
San Felipe (4 past.)	B	B	N	B	B-	B	B-	30	N	N	N	N	N	A	B-	-3	27
Warm Springs Area I	B+	B+	B+	B+	B-	B	B-	48	B-	B-	B-	B-	N	A	B-	9	57
Warm Springs Area II	B+	B+	B+	B	A+	B+	A+	24	B-	B-	B-	B-	A-	A+	A+	-9	15
Warm Springs Area III	A-	A-	B+	N	A+	B+	A+	-6	N	N	B-	N	A-	A+	A+	-18	-24
South Garden Creek	B	B	B	B+	B	B	B	45	B-	B-	B-	B-	B-	A	B	15	60
Bald Mountain	B	B	N	B	B+	B-	B+	39	B-	B-	N	B-	B-	A-	B+	18	57
Thompson Creek	B	B	N	B	B+	N	B+	36	B-	B-	N	B-	B-	N	B+	21	57
Split Hoof	B	B	N	B	B	B	B-	33	B-	B-	N	B-	B-	A	B-	9	42
Hillside	B	B+	A-	B	B	B	B	36	B-	B-	N	B-	B	A	B	15	51
North Garden Creek	B	B	N	B	B	B+	B	39	B-	B-	N	B-	B-	A+	B	9	48
Squaw Creek	B	B	B-	B	B+	B-	B	39	B-	B-	N	B-	B-	A-	B	15	54
Spud Creek	B	B	B+	B	B	B	B-	42	B-	B-	B-	B-	B	A	B-	15	57
Pine Creek	B	B	B-	B	B	B	B-	36	B-	B-	N	B-	B	A	B-	12	48
East Fork	B	B+	N	B	B	B	B	39	B-	B-	N	B-	B-	A	B	12	51
Sullivan Creek	B	B	N	B	B-	B	B-	30	B-	B-	N	B-	B-	A	B-	9	39

1/ Ratings were taken from the overall effect ratings for key species (palatable) and Unpalatable plants for each allotment in TABLE 1 of Appendix III-A. For each rating a numerical value was assigned: B+ = 9, B = 6, B- = 3, N = 0, A- = -3, A = -6 and A+ = -9. A "B" indicates beneficial and "A" signifies adverse.

2/ Sum of numerical values, i.e., for Red Lake, 6 + 6 + 6 + 9 + 9 + 3 + 9 = 48.

3/ Sum of numerical rating for palatable and unpalatable, i.e., for Red Lake, 48 + 27 = 75.

4/ Refer to Appendices 3-A & 3-B for information used to derive data in this table.

Construction of fences, cattleguards, spring developments and improvements, reservoirs, water catchments, pipelines, troughs, and trails would have a short-term, localized effect on vegetation disturbed during construction and development activities. Some vegetation at project sites would also be destroyed during these activities.

Some vegetation would be destroyed along fencelines and where springs, reservoirs, and water catchments are developed and troughs are located. Ripping for pipelines could destroy some vegetation in a narrow strip for the length of the pipelines. Trail construction would destroy vegetation in a strip several feet wide for the length of the trail. There would be approximately 244 acres within the unit that would either be disturbed or destroyed due to these activities.

During construction and development activities, there would be some soil compaction associated with equipment operation. Compaction restricts vegetative root growth, reduces water infiltration and permeability, and reduces available water for plant growth.

The 1,000-acre sagebrush spray project would reduce the amount of sagebrush and some forbs and other plant species. The project would change vegetation composition from a dominant sagebrush type with some grass and a characteristic sagebrush aspect to a predominantly grass type with small amounts of sagebrush. The reduction of competing sagebrush would result in greater availability of soil moisture and light penetration for the native grass plants such as Bluebunch wheatgrass, Idaho fescue and Squirreltail. These plants would improve in vigor, increase in size, and produce additional herbage volume. Additional grass seedlings may also occupy the additional available space.

If the spray is not properly applied, damage could result to native plants, farm crops, trees, or other vegetation growing in the vicinity of the project.

The 600-acre Chicken Creek chaining and seeding project would result in the reduction or removal of the vegetation present. This is mostly old growth and decadent sagebrush. The area would then be seeded with suitable grasses for livestock use, and forbs and browse for wildlife with the use of aircraft. The seed would then be covered by dragging a chain over the area. The project would be beneficial to the seeded plant species because there would be more available soil moisture and light penetration necessary for growth. Although success of seeding is influenced by weather conditions, the probability of success would be high, about 75-85%. If the project were not successful, it could result in invasion of annual weeds, sagebrush and other invader plants.

The 600-acre sagebrush burn project would reduce the amount of sagebrush present as well as some forbs, grasses and other plant species. The amount of damage to the plants would depend on amount of moisture in the vegetation and climatic conditions. These factors would determine how hot the fire burns, how rapidly it would spread, and amount of vegetation destroyed. The purpose of the burn would be to destroy the sagebrush so the grasses and other desirable plants for livestock use would not have to compete with the sagebrush and can increase in abundance. Most sagebrush burn projects satisfactorily kill the sagebrush plants, while having little detrimental effect on the perennial grass plants. If burns are not conducted properly, fires can get out of control and destroy other nearby vegetation.

Endangered or Threatened (ET) Species

The basic effect on ET plants should be the same as on other plants, i.e., consumptive use, trampling, soil compaction, and rest would collectively cause impacts. With the ET plants, however, a unique situation exists. Basic information regarding the phenology, physiology, palatability, and range is nonexistent. Determination of impacts on ET plants would involve considerable conjecture.

Two locations where wavyleafed thelopody was observed would remain unused by livestock. These include the Herd Creek and Malm Gulch sites. The Herd Creek location is on private ground and little can be done to insure this site remains intact. The Spar Canyon location is grazed by livestock and grazing would continue should the proposed action be implemented. However, nearly 100 years of grazing in this area has not eliminated the plant and it is doubtful that proposed grazing would. Other ET plants remain an unknown and impacts on these cannot be predicted.

Summary

Overall proposed management, including improvements, would favorably impact vegetation because plant growth requirements would be met resulting in a higher percentage of production potential being achieved. It is estimated after 15 years there would be approximately 16,084 more AUMs produced than at present. In Bruno Creek and in areas I, II and III and Warm Springs it is predicted that proposed management would not improve vegetative conditions resulting respectively in 1149, 510, 157 and 539 less AUMs (TABLE 3-3).

However, when AUM obligations for wild horses, wildlife, and livestock are fulfilled, it is predicted that 12,346 AUMs remaining would be available for allocation to other uses.

The worst-case impact on ET plants, particularly endemic species, would be elimination. However, it is not predicted that proposed actions would result in impacts which would eventually contribute to the extinction of these plants in the unit.

Terrestrial

General

The impact of livestock grazing on wildlife and its habitat in the Challis Planning Unit is dependent upon (1) the number of grazing animals per unit of area, (2) season of use, and (3) duration of livestock use. General impacts of the proposed action, which would occur whenever cattle are grazed in the unit are discussed below.

Nests of Ground Shrub-Nesting Birds Disturbed or Abandoned. Whenever cattle or sheep are concentrated in a pasture from May 1 to middle or late July (average total annual average of 133,000 acres) there would be adverse impacts on many species of ground and shrub-nesting birds such as sage grouse, blue grouse, chukars, meadowlarks, horned larks, killdeers, plovers, curlews, and vesper sparrows as follows: the eggs of many of these species would not yet have hatched, and there would probably be some nest trampling and/or nest abandonment, especially along stream bottoms where cattle use is most concentrated. Cattle frequently use shrubs or bushes for scratching purposes and often shove their heads into bushes in an effort to obtain grasses growing within the confines of the bushes. This disturbs birds using willows, sagebrush, bitterbrush, or other shrubs for nesting sites, such as sage thrasher, sage sparrows, mourning doves, hummingbirds, shrikes, warblers, blackbirds, and many others. Nests are sometimes destroyed directly; at other times, continual disturbance by livestock causes nest abandonment.

In addition, predation on eggs and young increases as the vegetative cover which hides them decreases. Removal of leaves or stems from shrubs and herbaceous vegetation at ground level makes bird nests easier for both ground and aerial predators to see and raid. Some birds attempt to renest when their eggs or nest are destroyed. Renesting success depends partly upon time of year, weather, food supply, disturbance sources, and other factors. The chance of renesting diminishes as the season progresses.

The effects of livestock grazing is only one of many factors regulating the success of bird nesting. Livestock and their feeding behavior would probably cause the destruction of a few bird nests in each pasture each year. However, because of lack of data, the impact on the population of any bird species in the unit would likely be slight (probably reduce the total number of birds that would be produced by less than 5%).

Livestock Use of Wet Meadows, Stream Bottoms, and Riparian Vegetation. In approximately 43 percent of the 53 pastures (average annual) having a moderate to high livestock use (moderate defined as 50-75% of the areas having their vegetation utilized from 75-100%) from May 1 through the summer, there would be heavy livestock use in wet meadows (100-200 acres) along stream bottoms (and associated riparian vegetation) and around small spring or seep areas.

These are crucial areas for many species of wildlife, including deer, antelope, sage grouse, blue grouse, killdeers, plovers, frogs, salamanders, robins, and snakes. The abundant insects associated with

these areas, which serve as prey for many small animals and birds, are greatly diminished when the vegetation is cropped to ground level. Cover plants needed by some of these animals are also removed. Wet meadows along stream bottoms are preferred by sage and blue grouse for brooding their young because of the variety and abundance of food found in such areas. Heavy livestock grazing removes most of the benefits for wildlife from these sites.

Cattle also graze on young willows and aspen shoots and sometimes eliminate them from streambanks. Willows are highly important as food for beaver, as nesting cover for waterfowl and other birds, as protective overhead cover for fish, and as important cover for frogs, toads, salamanders, voles, ground squirrels, mink, and weasels.

Most riparian habitats and wet meadows in the unit are in fair to poor condition. Use as proposed in Treatment A and B (Treatment B generally defined as grazing after seedripe until end of grazing season, approximately 7/21-10/31), of either the two- or three-pasture systems, would make these habitats even less suitable for wildlife.

Objective data on the impacts of livestock grazing on riparian habitats and wet meadows is lacking, but it is estimated that the proposed heavy use by livestock of these areas would likely decrease production of many species dependent on these habitats by approximately 10 to 30%. Treatment B occurs on an average annual 105,000 acres. When combined with the average annual acreage under Treatment A, this impact could occur on an average annual total of 238,000 acres in the unit.

Competition with Antelope and Other Big Game Animals for Early Spring Forage. From May 1 to mid-July, cattle would graze primarily on grasses and forbs. Utilization of these forage species, especially during May and June, would be in competition with antelope, deer, elk, and bighorns living in the area, and occurs at the time when all big game species need succulent forbs and grasses in order to provide adequate, nutritious milk for their young. When antelope fawns are weaned in late summer, they require forbs and grasses for their continued survival. Concentrated livestock grazing in a pasture during early spring or summer removes most of the available forbs and grasses, leaving little forage for young antelope. While deer will normally be at higher elevations (above 8,000 feet) by mid-summer, antelope remain at the low to middle elevations (5,000-7,500 feet) where most of the livestock use occurs. Impacts on big game species resulting from proposed livestock use of their crucial habitat is discussed later by species under specific impacts.

Competition With Small Mammals for Early Spring and Summer Forage. The majority of small mammals in the unit are either herbivorous or insectivorous. Removal of forage by livestock directly reduces the food supply of small mammals and indirectly affects them through the removal of herbaceous vegetation required for the development of insect populations upon which many small mammals, amphibians, and reptiles prey. The extent of this impact is unknown, but species such as golden-mantled squirrels, chipmunks, mice, and rabbits have been found to be more abundant where grasses and forbs provide substantial cover and make up a high percentage of the composition of vegetation in sagebrush types.

A wide spectrum of insects have been found to be more abundant in areas having a good density of herbaceous vegetation. Many species of insects are found only in association with specific species of plants. When these plants are grazed, and thus partly removed from the vegetative community, the insects normally associated with them also decline in number or disappear. Since many birds, bats, and small mammals also tend to select specific insect types as food, the reduction in insect prey, caused by removal of plants by livestock, produces an additional energy drain on the various animals searching for insects for their own maintenance or as food for their young.

Livestock use in the early spring and summer, as proposed in Treatment A, would produce an increased amount of competition to both small and large mammals requiring ample forage during their reproductive activities in early spring. The amount of impact on small animal populations because of the increased competition for forage is unknown.

Late Summer and Fall Livestock Grazing (Treatment B). Livestock feed to a small extent on shrubs throughout the year, gradually increasing their browse intake as fall progresses and more of the grasses and forbs dry out, wither, or become less available or palatable. Cattle may use bitterbrush in some areas yearlong, but their greatest utilization would come in late summer and fall. Fringe sage, black sage, shadscale, mountain mahogany, bitterbrush and snowberry would be used in varying degrees, depending upon the total forage composition and availability of these shrubs. These are key species for antelope during both summer and winter, as well as for deer and elk in winter. Whenever there is late

cattle or sheep grazing on a crucial big game winter range, there would be some reduction in available browse forage.

Bighorn sheep graze primarily on grasses and grasslike plants in winter, but also forage on biscuitroot (a forb), mountain mahogany, and spiny hopsage when they are available (Lauer, 1975). Utilization of key bighorn sheep winter ranges by cattle or domestic sheep during late summer or into the fall would seriously deplete the supply of forage available to wintering bighorns. Late summer or fall use would occur on approximately 1,500 acres of key bighorn sheep winter ranges annually.

Lack of suitable forage could cause some winter mortality, especially among lambs, and could result in poor lamb production the following spring. Any species of big game subsisting on poor quality or inadequate supply of forage during the winter could be expected to have poor fawn or calf production.

Livestock Grazing on Conifer-Dwelling Wildlife. A large variety of animals and birds live in coniferous forests, including bears, pine martens, tree squirrels, bobcats, mountain lions, blue and spruce grouse, foxes, weasels, elk, and mule deer. Some of these species are only indirectly dependent on the herbaceous or shrub understory, living on other animals or birds, on the nuts of fir and pine cones, or on spruce and/or fir needles. It is not expected that the numbers of any mammal population dependent on this vegetative type would be impacted by the proposed livestock use.

Livestock Use of Canyon Bottoms and Adjacent Slopes. Canyon bottoms and adjacent slopes are among the first areas grazed by livestock when released into a pasture. This use would occur in both the A and B Treatments (average annual 238,000 acres) in all sixteen proposed allotments. These areas at the lowest elevations (less than 5,000 feet) along canyon or valley slopes receive the least snow and are frequently the most important winter ranges for big game. Because of the proposed combined use by livestock and big game, the vegetation in such areas would have little opportunity to maintain its vigor and would be the first to deteriorate and die.

The proposed grazing systems would force increased livestock use farther up the slopes, which may help, but the lower slopes would continue to be heavily utilized during authorized grazing seasons and may not be able to maintain themselves, even with a year of rest every two or three years. If they were unable to maintain themselves and the vegetation deteriorated, the following impacts on big game would occur: (1) reduced supply of winter and spring forage for big game, and (2) increased malnutrition of big game, especially young animals, in winter and spring with increased mortality.

Livestock Grazing on Feeding Success for Birds of Prey. Birds of prey are generally more successful yearlong in their hunting in areas having diversified vegetation in good condition (Platt, 1975). When range condition is lowered significantly by overgrazing or natural disasters, lowered range use by eagles, elimination of some individuals, or a lowering of reproductive success can be expected (Craighead and

Craighead, 1956). However, in early spring a beneficial impact occurs for birds of prey when vegetative cover is removed, leaving rabbit and rodent populations more vulnerable to predation. Higher hunting success for both ground and aerial predators probably results from the more readily available food supply, possibly increasing fledging success of young birds of prey.

Shrubs and low-vegetation types provide cover for nesting for marsh hawks, short-eared owls, and sometimes golden eagles and ferruginous hawks. Removal of a high percentage of this low vegetation eliminates some potential nesting sites.

It is expected that increased livestock use in the spring every second or third year, as proposed in Treatment A (average annual 133,000 acres) would be beneficial to birds of prey during the nesting season, while subsequent proposed grazing treatments would provide for a general improvement in vegetative composition and density.

Proposed Grazing Treatments. The general impacts are as follows: Treatment A (covering an estimated annual average of 133,000 acres) would result in (1) trampling and/or abandonment of a few nests of ground and shrub-nesting birds, (2) high livestock use of wet meadows, spring sources, and stream bottoms and adjacent slopes, (3) high competition for forage with both small and large animals during their reproductive period, (4) possibly increased hunting success for birds of prey, and (5) decreased cover for most birds and animals as a result of forage removal by livestock which would be adverse to prey species and beneficial to predatory species.

Treatment B (covering an estimated annual average of 105,000 acres) would result in (1) high livestock utilization of browse species needed by big game animals in many areas in winter, (2) no use of wet meadows and stream bottoms by livestock during the critical reproduction period for most birds and small mammals, possibly resulting in increased survival of these species.

Treatment C (covering an estimated annual average of 119,000 acres) would result in (1) complete yearlong rest for the pastures every two or three years, depending on the system and allotment. During this year the plants and animals would be virtually undisturbed by man or domestic livestock. Nesting cover and abundant food should be available for both small and large mammals during their reproductive period. Wet meadows and streamside vegetation would have increased vigor and growth and would be especially favorable for nesting and brooding of young sage, blue, and ruffed grouse; for waterfowl nesting; and for food and cover for rodents, rabbits, amphibians, and reptiles. If the pasture includes important big game summer or winter range, the browse (shrub) species should provide good forage for these animals, depending on the amount of precipitation during the year and specific site conditions.

In the proposed three-pasture systems (10 systems covering 239,700 acres) there would be no livestock use in two of the three pastures each year until seedripe time for the key management species, or approximately July 15.

During Treatment A pastures would receive more intensive grazing use than under the present system because all use would be concentrated in approximately one-third the area now being used (three-pasture systems).

However, the two following years, plants (and the associated animal communities) would receive a period of rest from livestock grazing and/or disturbance. This should provide substantial benefits to wildlife over a period of years. It is expected that the two-thirds of the area (three-pasture systems) receiving no livestock use in spring and early summer (Treatments A and B) would more than compensate for the heavier use on one-third the allotment each year. It is thought that many wildlife species would learn to use areas for breeding and other life activities where livestock were not present.

The extent of the benefits or adverse effects on wildlife and their habitat depends largely on the actual starting and ending dates for livestock grazing in the various pastures. The earlier in the spring that grazing commences, the greater the adverse impacts on wildlife that are reproducing during this period; the later in the fall that livestock graze, the greater the quantity of browse forage they would utilize. Also, most allotments would be grazed only by cattle, but eight allotments would have authorized grazing by domestic sheep or horses (APPENDIX 3A), which have different use patterns and food habits than cattle.

A primary benefit to wildlife from Treatments B and C would be a gradual change in plant composition for the benefit of certain wildlife species, e.g., increase in forbs on a dense sagebrush flat for the benefit of sage grouse and antelope.

The primary adverse impact from Treatment B would be some browse utilization by livestock in late summer and into the fall. As grasses and forbs cured or became grazed off, livestock would gradually turn to the more palatable shrub species to partially fill their forage needs.

On important big game winter ranges, these shrubs are necessary for the survival of the big game herds. Even though the requirements of the plants might be met through the rest periods incorporated into a grazing system, there could still be a serious impact (either mortality or malnourishment) on big game animals using the area simply because their needed forage had been removed by livestock before their arrival on the winter range.

Five proposed allotments, i.e., Garden Creek, Pine Creek, Bald Mountain, Sullivan Creek, and East Fork are presently grazed with domestic horses and the proposed action would continue this use. Horses are extremely hardy and highly mobile, frequently utilizing areas seldom visited by cattle, either because of terrain or lack of water. They can bite or break off larger stems of shrubs than cattle or sheep and also utilize grass to a greater degree than cattle. Therefore, horses, both wild and domestic, often have a greater impact on wildlife cover and forage than either cattle or sheep. When horses graze pastures in the unit in either fall or winter, they offer serious competition for browse to all big game species.

Projects. Several are proposed for facilitating livestock management that would have various impacts on wildlife as follows:

Eighty-one miles of fencing is proposed, of which about 75 miles would be constructed in allotments utilized by antelope. All new fences constructed in areas utilized by antelope would be constructed to permit antelope passage at all seasons (suitable gap between bottom wire and ground or gap between top two wires). The fences, therefore, are not expected to cause more than occasional mortalities. All fences would also be constructed to be passable by deer.

About one and one-half miles of fence would be constructed at the mouths of the canyons between Cherry Creek and Big Lake Creek and along the border between the Marco Creek and Big Lake Pastures to control livestock use on the bighorn sheep winter ranges. These fence segments would be constructed to permit bighorn sheep passage (spacing from ground: 20", 35", and 39"). It is expected that this fencing would be beneficial to the bighorn sheep by restricting livestock trespass.

Fifty-four spring developments are proposed to provide additional livestock water. Greater distribution of water in the unit would be generally beneficial to wildlife unless livestock are induced to utilize shrubs in late fall and summer important for big game winter use. However, development of spring sites and seeps as proposed would tend to dry up the wet areas now existing on these sites. This would impact certain types of wildlife (i.e.: sage grouse, chukars, antelope) in the following manner: (1) reduced quality of sage grouse brooding areas and (2) reduced succulent forage available to antelope and many small forms of animals and birds living near the spring sites.

Three vegetative manipulation projects are proposed, i.e., a 1,000-acre spray project designed to reduce sagebrush and increase grass and forb density in the Centennial Flat Pasture of the Bald Mountain Allotment; a 600-acre burn in the Big Lake Pasture of the East Fork Allotment to reduce sagebrush density; and a 600-acre chaining to reduce sagebrush in the Chicken Creek Pasture of the Road Creek Allotment. The wildlife species closely associated with sagebrush habitat, such as vesper sparrows, sage thrashers, sagebrush lizards, sagebrush voles, etc., would probably never be as numerous in the proposed treated areas as at present because

these species are very closely linked to the sagebrush vegetative type and any reductions in total acreage of the type would result in decline in the species whose life requirements are met by sagebrush. In the Road Creek Allotment vegetative manipulation would eliminate sagebrush which serves as sage grouse and deer habitat.

Short-term adverse impacts of these vegetative manipulation projects would be immediate destruction of an unknown number of small mammals and reptiles and their habitats. Long-term impacts would be largely beneficial, e.g., (1) increased grass availability for deer, elk, antelope, and bighorn sheep during spring greenup, (2) increased forb availability for antelope and upland game birds during spring and early summer, and (3) increased establishment of young sagebrush plants that would provide additional leaves for foraging sage grouse. This increase in forage would benefit wildlife in the following ways: (1) less competition for early spring forage and (2) increased survival of wildlife living in the project area. Adverse impacts to deer would be malnutrition for some animals during the winter.

Other projects are proposed, such as pipelines, water catchments, storage tanks, and water troughs. None of these would be expected to have a significant impact on wildlife. There could be a minor loss of small animals and birds in the troughs even with the animal ramps which are proposed to be included in the trough designs.

Specific

Deer. Deer heavily utilize grass when it greens up in early spring. The degree of competition between cattle and deer depends on the number

of deer and cattle using the same area and the amount of grass available during the period of use. While the actual condition of the grasses in each area of spring deer range is not known, the overall condition of deer habitat in the unit is shown in TABLE 3-6.

It is estimated there would be a high degree of competition for early spring forage in portions of the following allotments when they receive Treatment A: Road Creek, Warm Springs, Spud Creek, Round Valley, and North and South Garden Creek.

Allotments that would have a moderate degree of competition for early spring forage between cattle and deer would include portions of Road Creek, East Fork, Squaw Creek, Bald Mountain, Split Hoof, Red Lake, and Pine Creek. Competition would probably be light in all other allotments because of the relatively few deer residing in them.

It is unknown how various degrees of competition would affect deer populations, but the types of impacts that could occur are: (1) short-term damage (approximately first five years) to spring ranges (over the fifteen-year period most ranges would gradually improve, since high competition for forage could occur only during Treatment A), (2) possible loss of fetuses or fawns by does if good spring forage is unavailable, (3) general decline in health of adult deer, and (4) some mortality of adult deer, resulting from inadequate forage. Proposed starting dates for livestock grazing for each allotment and proposed numbers of livestock are provided in APPENDIX 3-B for vegetation and the estimated numbers of deer currently using the various allotments are shown in TABLE 2-19.

The crucial ranges for deer delineated on MAP 2-13 consist primarily of shrub species, including black sagebrush, snowberry, bitterbrush, mountain mahogany, fringe sage, and different subspecies of big sagebrush. The proposed actions would authorize livestock grazing in late summer or into the fall and competition between cattle and deer would be expected to be high in portions of the following allotments: Warm Springs, Bald Mountain, Herd Creek, and North and South Garden Creek. Competition would be expected to be moderate in portions of the following allotments: Warm Springs, Sullivan Creek, Bruno Creek, East Fork, Spud Creek and Round Valley. In the remainder of the allotment it is expected there would be only slight competition. It is expected that the following impacts could occur as the result of moderate to high competition for shrubs: (1) gradual decline in vigor of shrubs, (2) death of some of the browse plants which could result in decline in health of adult deer during the winter months, (3) some mortality of adult deer, and (4) possible loss of fetuses of doe deer in winter because of inadequate diet. These types of impacts on deer and their habitat would occur only after a pasture had received grazing Treatment B (late summer and fall use). This treatment would occur only every two or three years, but survival of deer could be critical on a specific deer winter range if a severe winter occurred following a high livestock use of shrubs in that pasture. This could take place at any time during the fifteen-year period, but a gradual improvement in condition of shrubs would be expected by 1990 with implementation of the grazing systems because as grasses and forbs increased in the allotments, there would gradually be less utilization of shrubs by cattle.

TABLE 3-6 presents the acreage of winter deer habitat in various condition classes as it was in 1975 and estimates of acreages of crucial winter deer habitat that would be in the different condition classes by 1990 with implementation of the proposed grazing systems. A general improvement of habitat for all big game species and sage grouse would be expected with the increased production of AUMs of forage as discussed in the Vegetation Section in this chapter. Estimates of habitat improvement are based on species habitat requirements for the various species and the amount of the total projected AUM production that would occur in each of the habitat types, and are also related to known areas of use of the various species. This predicted improvement could have the following impacts on deer: (1) general improvement in physical condition of the herd, (2) increased herd productivity, and (3) improved fawn survival.

Deer numbers are currently (for 1975) considered to be below the carrying capacity of their ranges in many allotments. Based on the total estimated projected increase in AUMs unitwide, it would be expected that at least a 30% increase in deer numbers beyond the present carrying capacity could be sustained by 1990.

Bighorn Sheep. In most years, bighorns migrate from their winter ranges in the proposed Garden Creek and East Fork Allotments before livestock are turned out on the ranges. Present condition of bighorn habitat is shown in TABLE 3-6. Competition for grasses and forbs on the winter and/or spring range is not as significant as for deer, elk, and antelope. The major concern is summer or fall utilization of forage by domestic livestock on ranges used by bighorns in winter. Competition for forage between cattle and bighorns is expected to be high in all three pastures of the proposed South Garden Creek management system (31,638 acres) whenever Treatment B occurs in a pasture (grazing 7/10 - 9/4). The Birch Creek and Wood Creek pastures are crucial for bighorns in the Garden Creek Allotment. It is predicted that implementation of the proposed action would result in progressive deterioration of 2,378 acres of the habitat which would contribute to population decline.

Ziegler Basin, an important bighorn sheep area in the Road Creek Allotment, would be grazed by 190 head of cattle from May 1 to June 16 every third year. The area would not receive any livestock use during the intervening years. The present condition of this area is estimated to be fair. Nonuse of this area by cattle would permit a buildup in vegetation in the basin that could be utilized by cattle during the third year. The primary concern would be the amount of vegetation that would be left in the basin for bighorns after grazing by cattle. Much of the bighorn use occurs on steep slopes below the basin which are normally not used by cattle. However, with the amount of intensified use proposed, cattle use in these areas may increase. Normally there should be sufficient forage left for the wintering bighorns after spring cattle use every third year.

TABLE 3-6

CALCULATED ACREAGE OF HABITAT IN DIFFERENT CONDITION CLASSES FOR VARIOUS WILDLIFE SPECIES IN AND ESTIMATED ACREAGE OF HABITAT IN DIFFERENT CONDITION CLASSES IN 1990 WITH IMPLEMENTATION OF THE PROPOSED GRAZING SYSTEMS

Species	Estimated Number 1975	Estimated Number 1990	Habitat Condition (Acres and Percent) 1/ 1975 Poor	1975 Fair	1975 Good	1990 2/ Poor	1990 2/ Fair	1990 2/ Good
Deer	S 330-590	S 700	W26,111	W25,992	W 1,885	W20,889	W26,016	W 7,083
	W2300-3100	W3000-4000	(48.4%)	(48.1%)	(3.5%)	(38.7%)	(48.0%)	(14%)
Elk	W 190-225	W 200- 275	W 228	W 1,206	W 543	W 182	W 1,011	W 784
			(11.5%)	(61.0%)	(27.5%)	(9.2%)	(51.1%)	(39.7%)
Antelope	Y1100-1300	Y 1350	Y22,105	Y25,323	Y 8,694	Y16,579	Y24,518	Y15,025
			(39.0%)	(45.0%)	(16.0%)	(29.5%)	(43.7%)	(26.8%)
			S 6,272	S13,408	S 6,932	S 4,704	Y11,624	Y10,284
			(24.0%)	(50.0%)	(26.0%)	(17.7%)	(43.6%)	(38.7%)
Bighorn Sheep	W 60-100	W 125	W 3,205	W 3,827	W 107	W 1,923	W 3,578	Y 1,638
			(44.9%)	(53.6%)	(1.5%)	(26.9%)	(50.1%)	(23.0%)
Sage Grouse	Y1400-3400	Y2000-4000	BN 8,516	BN 5,679	BN 0	BN 5,536	BN 6,671	BN 1,988
			(60.0%)	(40.0%)		(39.0%)	(47.0%)	(14.0%)
			W 0	W 913	W 2,713	W 0	W 593	W 3,033
				(25.2%)	(74.8%)		(16.3%)	(83.7%)

1/ Y = Yearlong S = Summer W = Winter BN = Brooding/Nesting.

2/ Estimated of improved habitat condition in 1990 are based on the following percentages that the habitat would be expected to improve in 15 years:

Bighorn Sheep	40%
Antelope	25%
Elk	20%
Deer	20%
Sage Grouse	35%

However, if cattle use on the steep slopes does increase, the following impacts on bighorn sheep could occur: (1) possible increased malnutrition and death of an occasional sheep in severe winter, and (2) reduced productivity the following spring.

The Marco Pasture (2,880 acres) of the East Fork Allotment, another key bighorn area, would be grazed by 160 cattle for 20 days every other year (5/21 - 6/10). The current condition of the habitat in this area is estimated to be poor. The impact of the grazing use every other year would be: (1) competition for forage with bighorns during their lambing season, and (2) possible movement of bighorns to less desirable, but less disturbed areas. Additionally, livestock use of winter range could result in malnutrition and mortality of some bighorn during severe winters.

The nonuse every other year would be expected to provide the following beneficial impacts: (1) no disturbance or competition from livestock every other year, and (2) improved health of bighorns.

The estimated overall changes in bighorn sheep winter range condition between 1975 and 1990 is shown in TABLE 3-6. Under the proposed grazing systems, and with key fences to limit livestock use of crucial bighorn winter ranges, it is estimated that their primary habitat would improve by approximately 40%. The proposed systems would provide for additional forage, primarily Bluebunch wheatgrass, to be left on the key winter ranges, which in turn should permit the sheep to winter in better condition and would provide forage for the wintering of perhaps 25 to 50 additional bighorns in 1990.

Elk. The most important ranges for elk in the unit are the winter ranges in the Willow Creek Summit area (approximately 2,000 acres) and, at irregular times, in the proposed Thompson Creek Allotment (1,800 acres). Key forage species in the Willow Creek Summit area are mountain mahogany, sagebrush, and various grasses, while sagebrush, bitterbrush, and grasses are important in the Thompson Creek drainage. Although a few elk occasionally winter in the proposed Bruno Creek, East Fork, Squaw Creek, Spud Creek, and Bald Mountain Allotments, competition with livestock for early spring forage is considered low and no important impacts on elk have been identified. However, late summer and/or fall use (July 20-December 15) by livestock would occur one year out of every three in the Dry Canyon Pasture (4,114 acres) of the Road Creek Allotment, and two years out of every three in the Spring Basin, Broken Wagon, and Corral Basin Pastures (total of 37,661 acres) of the Warm Springs Allotment which would permit substantial use of both grasses and shrubs by livestock in areas where elk normally winter. These would be the areas of highest impact on elk in the unit. While it is not known what impact this competition would have on elk numbers and survival, either on spring ranges or winter ranges, it is expected that the following types of impacts could occur: (1) possible malnutrition and decline in health of adult elk on winter range, (2) some loss of young-of-the-year animals from inadequate suitable forage, and (3) some short-term damage (approximately first five years) to spring ranges (over the fifteen-year period most ranges would gradually improve, since the most critical competition period would be during Treatment A).

With implementation of the proposed grazing systems, it is expected that the most important winter ranges in the Warm Springs and Thompson Creek Allotments (3,800 acres) would improve in condition by about 20% by 1990. This is based on general vegetation improvement in both composition and density as described in the Vegetation Section of this chapter. TABLE 3-6 shows the acreages of crucial habitat that would be expected to change in condition between 1975 and 1990. Approximately 90% of the winter range for elk should be in fair to good condition by 1990 with implementation of the proposal. This improvement would have the following impacts on elk: (1) improved condition of elk in winter, and (2) increased productivity.

Antelope. During early spring and summer, both cattle and antelope graze primarily on grasses and forbs. This occurs at a time when doe antelope need succulent forbs and grasses in order to provide adequate, nutritious milk for their young. When the fawns are weaned in late summer, they require succulent forbs and grasses for their continued survival. Concentrated livestock grazing in a pasture removes most of the available forbs and grasses, leaving little forage for young antelope with the subsequent result of reduced plant nutrients available to fawns, particularly following weaning. Poor fawn nutrition following weaning can result in fawn mortality. The degree of this impact frequently depends upon availability of livestock water and the percentage of the area that is not utilized by livestock because of lack of water and steep or rugged terrain. If all or most of the pasture can be grazed by cattle, then the antelope must either move into a pasture having adequate forage or possibly suffer some fawn mortality because of

inadequate succulent forage. The extent to which antelope may move depends upon normal behavior patterns, topography, and vegetative types in the area. When the young antelope are a couple of weeks old, the band may range over an area several miles wide, but until then, they are normally tied to a relatively small area because of the immobility of their young.

Since antelope remain on the low to middle elevations (5,000-6,000 feet) throughout the year, they are in competition for some species of grasses, forbs, and shrubs during the entire livestock grazing season. Antelope and livestock competition for forage would be moderate to high under the proposed action in all or portions of the following proposed allotments: Road Creek, Warm Springs, San Felipe/Peck Canyon, Round Valley, Red Lake, Garden Creek, Spud Creek, and Split Hoof. The most intensive competition would occur in those pastures receiving either Treatment A or B. Antelope that remain in essentially the same area year-long would experience very little competition for forage two out of three years in the proposed three-pasture systems and about every other year in the two-pasture systems. Two out of three years there would be no livestock grazing under the three-pasture systems before about July 20, which would be highly beneficial to antelope. This would have the following impacts on antelope: (1) increased productivity, and (2) increased health and survival of fawns. In the allotments not listed, impacts on antelope would be expected to be low.

TABLE 3-6 shows the improvement in habitat condition that would be expected with implementation of the proposal. With the general vegetation improvement discussed in the Vegetation Section, it is expected

that general antelope habitat in the unit would improve by approximately 25%. About 70% of the yearlong habitat, 82% of the normal summer habitat, and 83% of the winter habitat should attain a fair to good condition by 1990. This is compared with 61%, 76%, and 76% of the yearlong, summer, and winter habitats, respectively, being in fair to good condition in 1975. This improvement should have the following impacts: (1) increased carrying capacity and health of adult animals and (2) improved productivity of the herds.

Black Bears and Mountain Lions. The effects of livestock grazing in changing vegetation composition and density would affect bears and lions only to the extent that their prey populations would change concurrent with the vegetative changes. Since the habitat for most large and small mammals would be expected to improve by 1990, prey abundance for bears, lions, coyotes, bobcats, foxes, and other carnivores should increase also. Some of the predators, such as the coyotes, are largely dependent on prey species, such as rabbits, that undergo cyclic population fluctuations independent of their habitat, so changes in predator numbers cannot be directly related to vegetative changes. Deer numbers, however, are more closely tied to their habitat. Increases in deer numbers could result from increased forage on their key ranges, which in turn could support a few more mountain lions. Insufficient information is available to estimate what the changes in either prey species or predators might be.

Small Mammals and Reptiles. Research indicates that there are usually more small rodents in ungrazed areas than in grazed areas. Anderson (1972) found approximately 22 more rodents in ungrazed areas

than in grazed areas of equal size in southwestern Idaho. Most of the increased rodents in the ungrazed pastures were Great Basin pocket mice and least chipmunks, for an increased total biomass of 64.7 grams per hectare more in the ungrazed areas. A similar correlation would probably exist in the Challis Unit, but no data is available for the area to estimate changes that would occur in either small mammal, reptile, or amphibian with implementation of the proposed action.

Birds. Sage grouse are almost totally dependent on the leaves of sagebrush in winter. Over 90% of their winter diet consists of the leaves and seeds of this plant. Winter cover is also highly important during long periods of intense cold and moderate to heavy snow accumulations. Late summer and fall livestock grazing on sagebrush reduces the food and cover available to sage grouse, unless other more succulent plants are available to the livestock. The impact on the grouse would be increased mortality during winters when inadequate forage or cover was available during severe winters. The magnitude of this impact is unknown for the Challis Unit but is expected to be moderate, occurring every three years in the Spring Basin, Broken Wagon, and Corral Basin pastures of the Warm Springs Allotment, in the Horse Basin, Bear Creek, Road Creek, and Red Canyon pastures of the San Felipe/Peck Canyon Allotment, and in all pastures of the Herd Creek Allotment covering a total of approximately 92,356 acres. This impact would also occur every two years along the stream bottoms of the Sullivan Creek Allotment, every year along Kinnikinic Creek in the Bald Mountain Allotment, and every two years in all pastures of the North and South Garden Creek Allotments.

Present information indicates there would be low impacts (little mortality) on sage grouse in the remaining allotments.

TABLE 3-6 indicates that approximately 25% of the sage grouse winter habitat is presently (for 1975) in fair condition and about 75% is in good condition. It is expected that implementing the proposed action would improve the condition of the winter habitat to about 16% in fair condition and 84% in good condition. It is estimated, generally, that sage grouse habitat would improve about 35% by 1990. This improved winter habitat could help reduce sage grouse mortality in severe winters.

About 60% of the brooding/nesting habitat (wet meadows, stream bottoms, sagebrush hillsides) were in poor condition in 1975 and about 40% of the brooding/nesting habitat was in fair condition. With the proposed action, it is estimated that by 1990 about 39% of the brooding/nesting habitat would be in poor condition, about 47% in fair condition, and about 14% in good condition. This improvement would have the following impacts: (1) less nest destruction and/or abandonment, (2) less loss to predation because of better cover and (3) better foraging for young chicks.

Grouse are irregularly cyclic in their populations with habitat and spring nesting weather probably the two most important environmental factors regulating their numbers. Not considering uncontrollable factors, the improvement in the habitat that could be expected by 1990 might permit an increase of about 30% over present grouse numbers.

Many of the areas used by sage grouse for nesting and brooding are also used by blue grouse. The habitat conditions and impacts discussed for sage grouse would generally apply to blue grouse, except that blue

grouse winter primarily in spruce stands where their habitat is virtually unaffected by livestock grazing. No specific impacts from livestock grazing on blue grouse or ruffed grouse winter habitat have been identified.

Chukars and Hungarian partridge are scattered throughout the unit as discussed in Chapter 2, but no impacts on their populations from livestock grazing have been identified.

Waterfowl use the main Salmon River and its tributaries for nesting and the Salmon River for wintering. No specific impacts from livestock grazing have been identified for these birds. Fluctuating water levels and weather are probably the most important factors affecting nesting success and survival. Habitat would be much more desirable for waterfowl attempting to nest in those pastures receiving Treatment C (rest) and Treatment B (graze after seedripe).

Wild Horses. In the past, wild horses have had the advantage of using some of the rougher, steeper country that cattle were not using because of steepness of slope and/or lack of water. A combination of new water developments (54 new water developments and 15 spring improvements), and increased concentrations of cattle per unit area would permit cattle to use some of the country previously unavailable to them. This would result in a reduced competitive advantage for horses. However, the proposed actions are not expected to prevent the minimum number of 150 horses to be maintained as proposed in the Salmon District BLM Wild Horse Management Plan.

It is reasonable to assume that as cattle enter Treatment A and B pastures en masse, most (70-90%) of the horses would likely move from these pastures to rested pastures (Treatment B pastures until seedripe

and Treatment C pastures). This response would be due to the horses' intolerance of greater cattle concentrations and associated human activities, and because of increased competition for forage.

From a forage standpoint, it would be beneficial for horses to use the rested pastures. These pastures would provide a place free of livestock grazing where forage quality and quantity should be better. However, horses are creatures of habit. As they move from livestock use pastures, traditional areas of use (i.e. home ranges) may be changed. Therefore, habits and behavioral functions common to wild horses may be modified. For example, as horses move into rested pastures, total living space would be reduced and the density of wild horses per unit area would increase. This may result in the following impacts: (1) band structure changes resulting from increased contact between bands; (2) more stress and competition among bands (i.e., increased stress among stallions, increased competition for available forage cover, water, living space, etc.); (3) magnification of disease and parasite problems; and (4) change in foaling areas, and a variety of other possible factors. It may be possible that these responses could trigger density-dependent mechanisms which may contribute in controlling population numbers (i.e., lower rates of reproduction, higher mortality, etc.). Total ramifications of the proposed action are not completely understood because there is little known about effects of rest-rotation grazing on horses.

The limiting factor on horse numbers is winter range. Therefore, impacts imposed on horse winter ranges are critical. Treatment A pastures, and in some cases Treatment B pastures, located on horse winter ranges, may become a problem for wintering horses because of

the extensive livestock use being proposed. Winter ranges available to horses during heavy snowfall winters becomes extremely limited (54% of the horse area is potentially available). If these pastures experience 70-90% utilization of all desirable forage by livestock, winter forage for horses could be extremely limited. If the Treatment A pasture is a winter area for horses, horses may have to switch wintering areas. If they will not or cannot switch, they would suffer from a lack of quality and quantity of forage to sustain them through the winter, resulting in greater mortality to weaker animals. Other symptoms such as loss of weight, and unhealthy appearance and condition could result. These symptoms could have implications such as lower rates of reproduction, and increased disease and parasite problems.

These impacts would be magnified during the initial grazing cycles (first three years) until vegetative response is more dramatic and more total herbage volume is produced. Drought years could also be a problem. As the system begins to increase the productivity of the forage, the impact of Treatment A pastures to wintering horses would become less severe.

Treatment C pastures on horse winter range (average annual acreage of approximately 56,000 acres in horse winter range) should benefit wintering horses because they would not have been grazed by livestock and quality or quantity of forage should be better. The real impact would be on the pastures livestock are using, and the magnitude of the impact would be dependent upon the severity of livestock use and whether or not the horses can adjust to that use.

Fences associated with livestock grazing in a wild horse area impact wild horses. The impact is dependent upon the location of the fence and the type of fencing material used. There are three potential impacts:

1. Fences may restrict or confine wild horses. This is contrary to the free-roaming nature of wild horses and places limitations on the visual resource value of knowing horses are in a free-roaming condition. When fences actually confine wild horses, potential impacts could occur. An example would be increased inbreeding and behavioral changes due to the lack of interchange with other horses, which could result in a degeneration of the horses, or again density-dependent mechanisms could result in lower rates of reproduction, higher mortality, etc.

2. Fences can inflict serious damage to horses, especially if barbed wire is used. Barbed wire is not easily seen and horses could become entangled in fences, especially while running, and serious injuries may occur. As a result some could die from infection or a loss of blood and some could be permanently maimed.

3. Fences can become a physical barrier to horses in winter when heavy snows and fences can combine to trap horses in higher elevations resulting in the possibility of horses dying from starvation.

Proposed fencing in the wild horse area is shown in MAP 3-1. Specific potential problem fences are discussed later in this section.

Open-ended fences designed to allow passage in the rough, higher country could become completely closed when heavy snowfall precludes horses using trails around fences, thereby causing the same impacts as in (1) above.

It may be assumed most water developments would have similar general impacts upon horses. Most water developments would offer little benefit to horses. Horses currently have the advantage of using much of the higher, steeper country that cattle are not able to use because of lack of water. Horses can graze farther from water than cattle. This advantage would be reduced as new water developments encourage livestock use in areas that previously were used almost exclusively by horses, thereby increasing competition. Some adjustment by horses to new water developments could also be necessary, especially those including storage tanks and water catchments, because of the wary nature of wild horses.

Cattleguards could also be a problem for wild horses. Occasionally, a horse could try to jump a cattleguard and break a leg between the guards. This potential could be greater when horses are under stress.

The chaining and seeding as proposed would primarily benefit the horses by providing additional forage.

Grazing. Year 4 of the proposed plan of implementation could be a problem for wintering horses. During this year approximately 70% of the critical horse winter ranges (approximately 118,000 acres) would be covered by Treatment A or B. The intensity of the impacts of this year to horses would be based on the severity of livestock use, the type of winter, the availability of forage based on the previous summer's growing conditions, and the ability of the horses to adjust.

Horses most likely would concentrate in areas on winter ranges that have available feed such as rested pastures, or Treatment A and B pastures that have received light use. The impact to horses would result from

the concentration effect which could result in potential impacts as described earlier under general impacts (see item 1).

The Lone Pine pasture (6,368 acres) in the proposed Red Lake Allotment poses a definite short-term problem for wintering horses. Treatment A proposes to use 813 AUMs in the pasture. Critical horse wintering range covers 30 to 40% of this pasture and some 20 to 30 horses may depend on this pasture for winter forage. With the kind of livestock use that is proposed, the impacts would likely result in a magnification of the problems discussed under general impacts for winter horse use (see item 3) for the 20 to 30 horses that depend on this area for winter range.

All pastures in the Warm Springs Area III (37,661 acres) would decrease in AUMs for horse use over a fifteen-year period. Treatment B creates the most significant problem. About 90 horses depend on these pastures yearlong. As forage for horses decreased the animals would either move to other areas or the impacts would be reflected in reduced health and condition of the horses (see general impacts).

Winter areas for horses would also be affected because sufficient forage would not be produced to sustain wintering animals. The impacts would be a magnification of the problems as discussed under general impacts for winter horse use (see item 3).

Improvements. Proposed project fence #6 Anderson Peak Fence (MAP 3-1), San Felipe Allotment, would tie into two existing fences and completely close off the north boundary of the allotment. Horse movement occurs around Anderson Peak, and this fence would definitely inhibit their movement. The greatest effect would be to inhibit the free-roaming behavior of the horses and the possibility of the fence trapping the

horses in the higher elevations because of heavy snow, and as a result some horses could die of starvation.

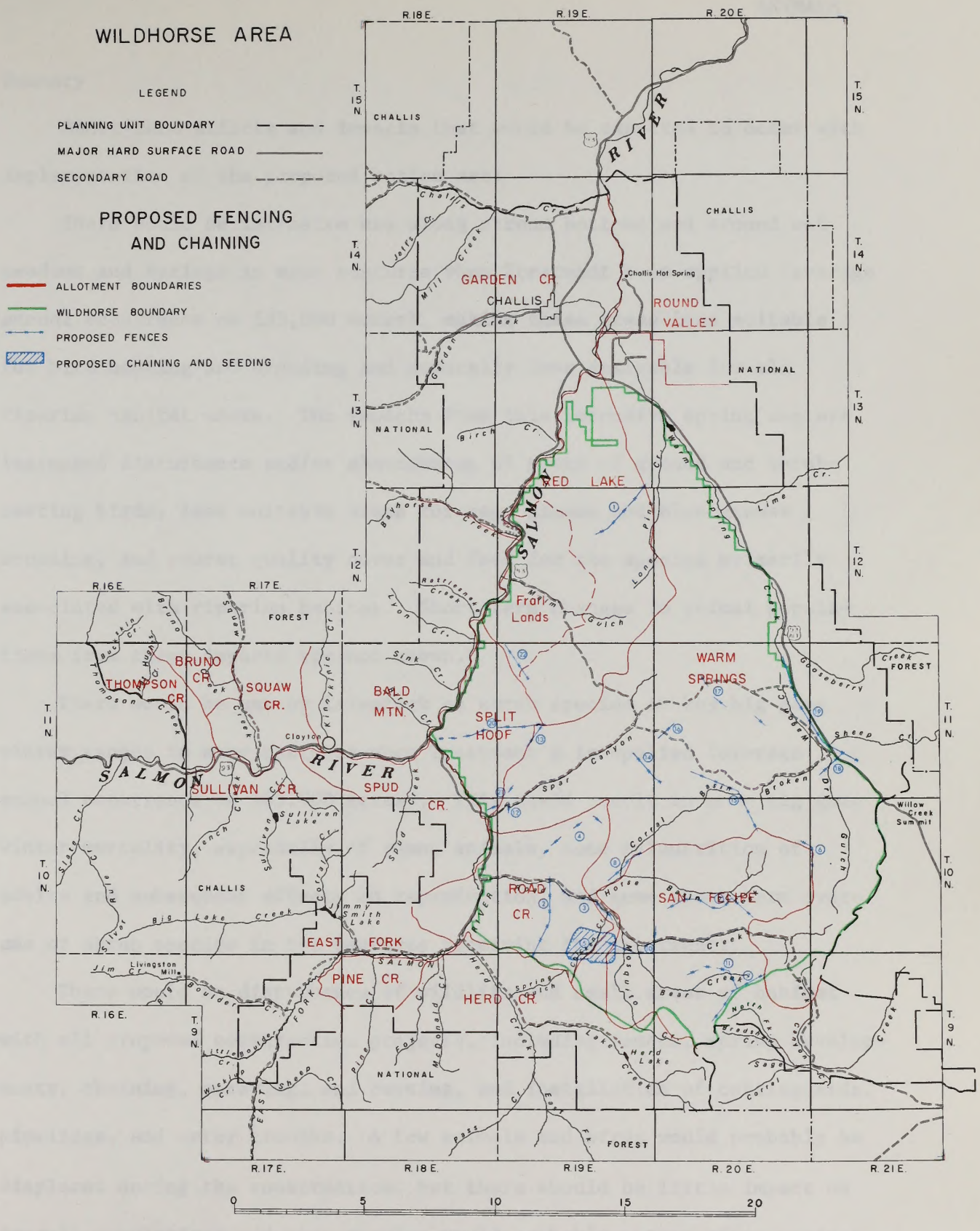
The location of proposed Corral Basin fence #15, Warm Springs Allotment, would have an impact because of the lack of a "skyline" effect which enhances visibility to horses. Horse movement in the area is intense and animals could collide with it, resulting in injuries. In addition, the fence would be open-ended at the 8,000-foot level on Spar Mountain. During harsh winters, horses might not escape through heavy snows to gain access to winter forage outside the pasture. If this occurs. some horses may die of starvation.

Endangered or Threatened Wildlife

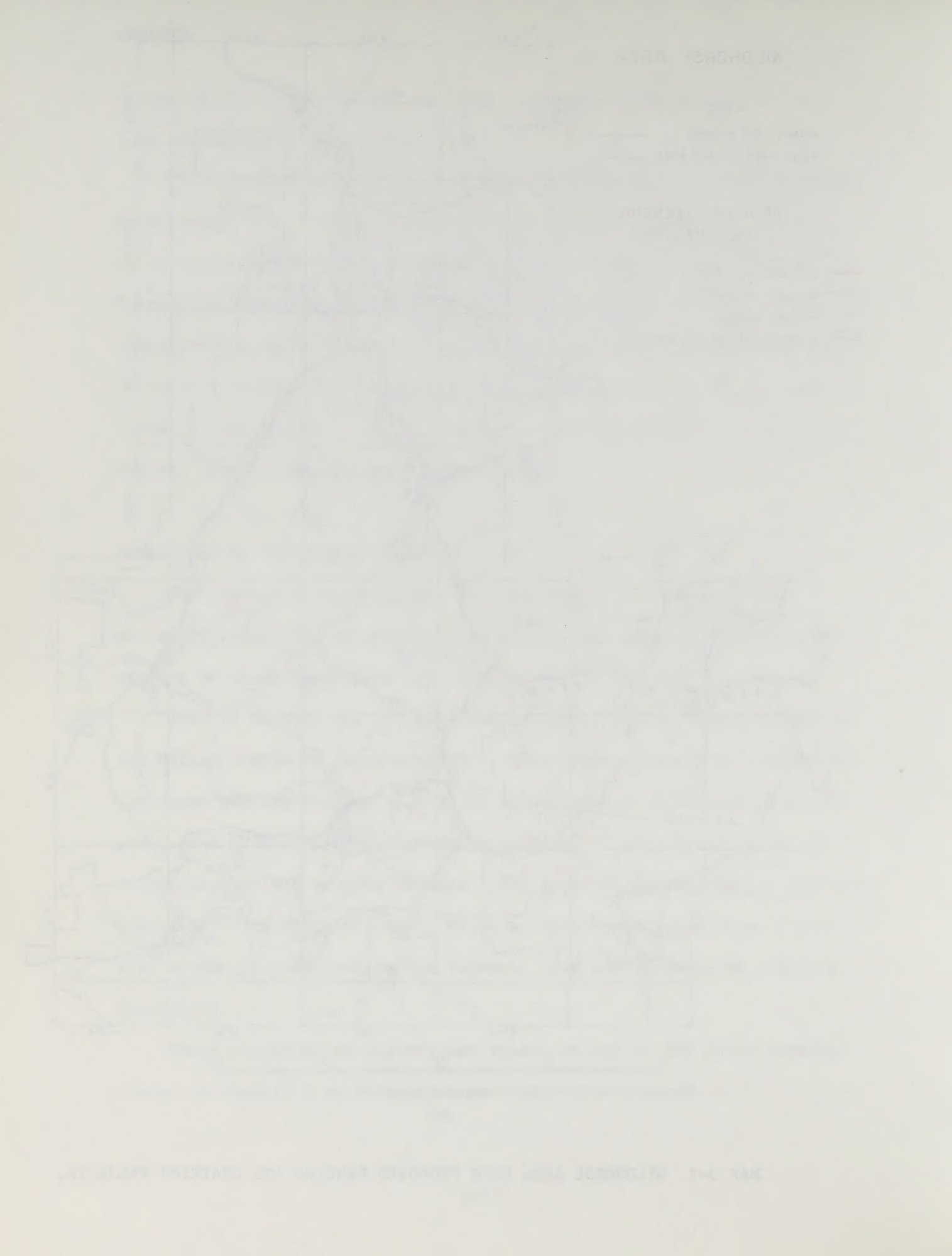
The peregrine falcon is the only species in the Challis Unit presently classified as endangered. No specific impacts from livestock grazing on these birds have been identified.

Prairie falcons use the unit for nesting. Their present status in the United States is "undetermined." They feed primarily on small birds and rodents. Any factors that would influence the production of their prey, such as decreased ground cover or food, would indirectly affect their survival and nesting success. The proposal is expected to increase vegetation throughout the unit, which in turn should produce more prey than presently available to the falcons. The impact would be slightly beneficial.

There should be no significant impact on any of the other species listed in Chapter 2 as threatened or status-undetermined.



MAP 3-1 WILDHORSE AREA WITH PROPOSED FENCING AND CHAINING PROJECTS.



Summary

Short-term effects and impacts that would be expected to occur with implementation of the proposed action are:

There would be intensive use along stream bottoms and around wet meadows and springs in most pastures when Treatment A is applied (average annual occurrence on 133,000 acres), making these areas less suitable for bird nesting and brooding and generally less desirable for all riparian habitat users. The impacts from this intensive spring use are increased disturbance and/or abandonment of nests of ground and shrub-nesting birds, less suitable areas for sage grouse and blue grouse brooding, and poorer quality cover and food for the species primarily associated with riparian habitat. Short-term changes in animal populations from these impacts are not known.

There would be use by livestock on shrub species on key big game winter ranges in many pastures when Treatment B is applied (average annual occurrence on 105,000 acres). This could result in some big game winter mortality, especially of young animals, some malnutrition of adults and subsequent effects on reproduction, and some short-term overuse of shrub species in the pastures receiving the treatment.

There would be disturbance of wildlife and small areas of habitat with all proposed construction projects, including fences, spring developments, chaining, spraying, and burning, and installation of cattleguards, pipelines, and water troughs. A few animals and birds would probably be displaced during the construction, but there should be little impact on overall populations and most species would probably return after project completion.

There would be heavy, short-term use of many plant species during most A Treatments. While excessive use could not be tolerated every year, heavy use followed by complete rest for one or two growing seasons, depending on the system, would permit development of increased plant vigor and growth, providing better food and cover for the wildlife present during the years of rest.

Long-term effects and impacts that would be expected from the proposed action are:

There would be gradual increase in quantity and quality of vegetation throughout the unit, depending on specific site potential, which would permit general improvement in the health of most wildlife species present, including some potential for increases in big game numbers. Vegetation improvement as a result of the proposed action would provide potential forage and cover for an estimated additional 200 to 300 yearlong deer and 1,000 to 2,000 wintering deer; 50 to 100 wintering elk; 100 to 300 additional yearlong antelope, and 50 to 100 wintering bighorn sheep. Improvement in nesting, brooding, and wintering habitat for upland game birds would permit an increase in their populations by approximately 20 to 40%. All estimates are entirely dependent on the portion of the additional forage production allocated to wildlife in areas suitable for the respective species.

There would be overall, gradual improvement in the habitat for most species of wildlife by the end of the fifteen-year period. Even though individual treatments in various pastures would create moderate to high impacts on wildlife for one year, the over-riding benefits of light or no use in subsequent years, depending on the system, should be substantial.

After initial grazing cycles are completed, improved vegetative conditions should benefit horses by providing more forage. This would also help to minimize the impact livestock grazing, especially under Treatment A, would have on horse winter ranges. The initial grazing cycles (first three years) would be the hardest on wintering horses because Treatment A, and sometimes Treatment B, would require the use of most (70-90%) of the desired forage to support the concentrated livestock use.

The impact of horses having a reduced competitive advantage in pastures that livestock are using would be partially offset by the horses being able to use rested pastures. However, it is not known how the horses would be affected as they move from the pastures being grazed by livestock. Habits and behavioral functions may be modified. To what degree they may be modified would require further study after initiation of the proposed action.

Fences, as they have been recommended in the proposed action would not drastically affect the wild horses' free-roaming behavior. The greatest potential impact would result from the fences being barbed wire, and the distinct possibility of horses hitting them when under stress. Some fences may also inhibit seasonal movements of the horses.

Despite impacts resulting from implementing the proposed action, it is not expected that horse numbers would be less than the 150 the BLM recommends to maintain on the Challis Unit.

Aquatic Life

General

As with terrestrial wildlife, the impact of livestock grazing on fish and their habitat is dependent on the season and duration of use as well as the number of grazing animals per unit of area. With the proposed grazing systems, Treatment A would affect fish habitat the most adversely because the greatest livestock use would generally occur during this treatment. Aquatic habitat and fish populations would generally be impacted to a lesser extent during Treatment B. Treatment C would be highly beneficial to fish habitat and all aquatic life.

Treatment A - (Beginning of grazing season through seedripe, May 1-July 20; involves an average of over 133,000 acres annually)

During Treatment A livestock would concentrate along streams to take advantage of water, succulent forage and shade. Streambank vegetation would, therefore, be heavily grazed in each pasture one out of every three years in allotments with proposed three-pasture systems and every other year in allowance with two-pasture systems as follows:

Pastures Grazed Every Third Year

Allotments with Three-Pasture Systems	Present Habitat Conditions of Streams (Estimated Miles)			
	Good[1/]	Fair	Poor	Total
Red Lake, Herd Creek, Road Creek, Bruno Creek, Round Valley, San Felipe/ Peck Canyon, Warm Springs and Garden Creek (South)	3.0	14.9	19.0	36.9

1/ Ratings for Good, Fair and Poor are defined in APPENDIX 2-H.

Pastures Grazed Every Second Year

Allotments with Two-Pasture Systems	Present Habitat Conditions of Streams (Estimated Miles)			
	Good	Fair	Poor	Total
Garden Creek (North), Squaw Creek, Spud Creek, Pine Creek, East Fork, Bald Mountain, Thompson Creek and Split Hoof	10.2	20.3	6.2	36.7

The present habitat conditions for each stream are listed by proposed allotment in TABLE 2-26.

All streams, except 1.5 miles of Road Creek (proposed fenced area) and those in the Sullivan Creek Allotment (Sullivan Creek, French Creek and part of the Salmon River) would receive Treatment A. About 74 miles of fresh-producing streams within the Challis Unit would thus be directly affected every second or third year.

Most streambank vegetation would be removed by grazing during Treatment A because livestock would be concentrated in smaller pastures than they are with present grazing. Removal of low streambank vegetation (grasses, sedges and shrubs) would cause higher summer water temperatures and eliminate cover for fish. Loss of vegetative bank cover results in smaller populations of fish as the carrying capacity of streams is reduced.

Sedimentation of streambeds would continue from upland areas as described under the Soil and Water Resources section in Chapter 3. Heavy trampling of streambanks would also contribute sediments to streams as well as hinder reestablishment of plants. Undercut streambanks used by fish as cover in small and medium-sized streams would be destroyed by

trampling and subsequent erosion during high runoff. Erosion of streambanks and livestock walking in streams during Treatment A would cause unstable stream channels and further sedimentation. Increased sedimentation adversely affects production of salmon and trout by lowering survival of eggs and young fish, limiting aquatic food organisms and reducing rearing habitat.

Suspended sediments cause turbidity (muddy water). Increased turbidities would be expected during Treatment A because more erosion is predicted to occur initially as discussed under the Soil and Water Resources section. During the spring runoff, prolonged periods of increased turbidities would result in lower water quality, loss of angling opportunities in downstream areas, and reduced basic productivity of streams as muddy water prevents some aquatic plants from completing photosynthesis. Fish production would be affected an unknown amount by the temporary disruption of the first trophic level (energy production by plants) of the aquatic food web.

Concentrations of animals along streams would result in animal wastes being defecated either directly into streams or entering via overland flows from snowmelt or rainfall. Bacterial counts could become high enough in smaller streams to cause reductions in dissolved oxygen concentrations in localized areas when Treatment A is occurring. Aquatic life becomes stressed as oxygen levels begin to decrease, and fish populations could suffer mortalities if bacterial contamination becomes large enough.

Mortality of developing trout eggs in gravel redds or recently hatched young fish could occur when livestock are walking in smaller

streams during Treatment A. This type of mortality probably does not happen often and is only one of many kinds of natural mortality that affect fish populations in the Challis Unit.

The above impacts would cause adverse changes in water quality and physical habitat conditions, resulting in reductions in fish populations to an unknown extent. The magnitude of these impacts cannot be quantified because data on fish populations are lacking and research on the relationship between various grazing treatments and fish production has not been conducted. However, adequate research has been done to establish that these impacts could result in substantial loss of fish production.

Treatment B - (After seedripe until end of grazing season, July 21 through different allotment ending dates; involves an average of about 105,000 acres annually)

Deferred grazing provided by Treatment B would result in improved streambank vegetation, lower water temperatures, less bank erosion and sedimentation, and increased channel stability until mid-July when livestock are turned out in pastures. Fish production would be increased temporarily in streams with pastures receiving Treatment B because of the improved habitat conditions (approximately 53 miles).

Each pasture in allotments with proposed three-pasture systems would receive Treatment B every third year. Approximately 37 miles of fish-producing streams would be impacted by this treatment in the eight allotments as listed in the preceding section for Treatment A. An additional sixteen miles of streams would be involved in the proposed

two-pasture deferred rotation systems which receive Treatment B every other year (Squaw Creek, Spud Creek, Pine Creek and East Fork Allotments).

During Treatment B, less forage would generally be removed from the overall pasture because grazing use would be less than during Treatment A (exceptions are Herd Creek, San Felipe three-pasture, some pastures of Warm Springs, and Garden Creek (South) Allotments). Animal concentrations have occurred along streams under present grazing use as would continue under the proposed action. Because of this, after cattle are turned out they would probably consume most of the low streambank vegetation with time and continue to trample streambanks until removed in late summer or fall.

Removal of streambank vegetation would cause slightly higher water temperatures in August but not as much as with Treatment A. Since much of the vegetative bank cover would be eliminated by fall, there would be less suitable rearing area for young fish resulting in smaller fish populations.

During Treatment B, more livestock use in smaller pastures would result in a greater concentration of animal wastes in a localized area at a time when stream flows are low and water temperatures are still high (until late August). Whenever this occurs along small streams, dissolved oxygen concentrations could be reduced to critical levels causing stress to aquatic life and fish kills if the amount of organic material added is large enough. This impact would probably not be a serious problem in those pastures where Treatment B does not begin until October (Pine Creek, Bald Mountain-Kinnikinic pasture only, Squaw Creek

and East Fork Allotments). Summer water temperatures would also not be affected in streams (thirteen miles) within these four allotments.

An estimated 5 to 10% overall decrease in sediment yield is predicted for the Challis Unit during Treatment B. Fish habitat would be improved slightly with a small corresponding increase in fish populations due to increased survival of young fish, greater numbers of food organisms, and better rearing conditions.

In some allotments there would be continued damage to streambanks and sedimentation caused by heavy trampling due to greater concentrations of livestock use. These areas will be discussed under specific impacts. Bare streambanks would also be susceptible to erosion the following spring during high snow runoff before plants have grown much.

The incidence of cattle causing mortalities to developing embryos or recently hatched fry while walking in streams would be greatly reduced by deferring grazing until after seedripe.

Treatment C - (Rest season-long, involves an average of over 119,000 acres annually)

Vegetation would not be removed by domestic livestock and sediment yield would be reduced an estimated 20 to 30% during Treatment C. In those allotments where three-pasture systems are proposed (listed under Treatment A), Treatment C would occur once every third year and affect about 37 miles of streams. Two-pasture rest-rotation systems are proposed for the Garden Creek (North), Bald Mountain, Thompson Creek and Split Hoof Allotments. About 21 miles of streams are involved with these four allotments where Treatment C would occur every second year.

Water quality would be improved due to reduced suspended sediment and elimination of animal wastes from domestic livestock. There would also be less sedimentation of streambeds, increased streambank vegetation for cover, lower summer water temperatures, less erosion of streambanks and increased channel stability. These improved habitat conditions would result in larger fish populations, but the magnitude of increase cannot be predicted because basic data are not available.

Unitwide, there are predicted increases in vegetative ground cover and decreased sedimentation rates of streams fifteen years after implementation of the proposed action. The effects of these changes would be improvement in fish habitat of some streams and a small, overall increase in fish populations within the Challis Unit.

Increased vegetation along streambanks is anticipated by implementation of the proposed grazing systems and is an objective of some allotment management plans. Any substantial increase in the growth of streamside vegetation (grasses, sedges, shrubs, or trees) would improve habitat conditions and result in larger fish populations. However, the physical condition of streambanks and associated vegetation are not expected to improve as fast as vegetation growing away from streams because of continued heavy grazing and trampling which would also prevent reestablishment of plants.

Generally, more livestock use would be allowed in smaller pastures during two of the three years in the three-pasture systems although at different times of the year. Since livestock concentrate along streams to take advantage of water and good forage, it may require many more years for streambanks to become revegetated and provide the desired

benefits to fish habitat. Similar grazing systems have not been in effect long enough to predict how many grazing cycles must be completed before streambanks become stable and maintain satisfactory vegetative cover during all treatments.

Effects of water developments and fencing projects on fish habitat would be in the form of increased sedimentation of streambeds, resulting from clearing and construction of equipment roads. Most impacts on fish populations should be slight in magnitude and short term, lasting only until disturbed areas become revegetated. Exceptions could be where projects are constructed on steep slopes, on soil association D, or where channels are formed in roads and equipment tracks which would carry water and cause erosion. In these situations, increased sedimentation of streams could continue for many years. However, the increase in sedimentation from most of these projects would not be sufficient enough to cause a change in habitat conditions or reduction in fish numbers.

Specific

Aquatic habitat, identified in the ensuing discussion, is expected to be adversely impacted should the proposal be implemented. Impacts are related to current use on the allotments. Changes in habitat conditions would result in decreased fish populations of some streams.

Road Creek Watershed. Increased sedimentation of Road Creek and other streams within its watershed would be expected from the following pastures.

Road Creek Allotment
Ziegler Basin Pasture (7,880 acres) - Treatment A

San Felipe Allotment
Horse Basin Pasture (13,303 acres) - Treatment B
Bear Creek Pasture (7,296 acres) - Treatments A & B
Road Creek Pasture (6,848 acres) - Treatments A & B

Warm Springs Allotment - Area III
Corral Basin Pasture (14,209 acres) - Treatment B
Spring Basin Pasture (11,862 acres) - Treatment B

Streambank vegetation and stability both would be impacted most by Treatment B because of large increases in livestock use in the following pastures: Bear Creek, Road Creek, Horse Basin Creek, Corral Basin, and Spring Basin (refer to TABLE 3-7 for comparative use figures); for example, in Bear Creek present use 596 AUMs compared to 1,813 proposed AUMs.

Some increases in animal wastes entering streams are predicted for Treatment A in Bear Creek, Horse Basin and Road Creek pastures. Larger amounts of organic material would be expected to occur in streams during Treatment B in Horse Basin, Bear Creek, Road Creek, Corral Basin, and Spring Basin pastures.

Impacts on fish habitat of Road Creek are expected to be adverse during years 3 and 4 of the proposed action. Livestock use would be increased 14 and 36%, respectively, for these two years (see TABLE 3-7).

TABLE 3-7

PRESENT AND PROPOSED LIVESTOCK GRAZING USE
IN AUMS FOR THE ROAD CREEK WATERSHED 1/

Proposed Pasture	Estimated Present AUM Use (season-long)	Proposed AUM Use by Year of Implementation 2	3	4
Dry Canyon	197	585(A) 2/	58(B)	0(C)
Ziegler Basin	220	58(B)	0(C)	585(A)
Chicken Creek	211	0(C)	585(A)	58(B)
Horse Basin	1,170	1,813(B)	0(C)	934(A)
Road Creek	610	0(C)	934(A)	1,813(B)
Bear Creek	596	934(A)	1,813(B)	0(C)
Corral Basin	955	0(C)	613(A)	2,325(B)
Spring Basin 3/	250	296(A)	775(B)	0(C)
Totals	4,209	3,686	4,778	5,715
Percent increase or decrease		-12%	+14%	+36%

1/ Present and proposed grazing use based on AMP data. (Refer to Appendix 3-B) Letters in brackets correspond to treatments.

2/ Treatment in parenthesis.

3/ AUMs are based on one-third use of total pasture made in upper Road Creek watershed.

Overall proposed use for the three-year grazing cycle would be an increase of about 12% over existing use. The cumulative effects of increased sedimentation, loss of streamside vegetation and undercut banks for cover, unstable stream channels and lower water quality (increased animal wastes and turbidities) would result in less fish production. It is impossible to estimate the magnitude of the loss.

Salmon River. Increased overland flow and sediment yield are predicted to occur during Treatment A in the Lone Pine Pasture (6,368 acres, Red Lake Allotment) and Penal Gulch pasture (4,660 acres, Round Valley Allotment). There are no perennial streams in these pastures. However, increased sediments could be transported to the Salmon River during heavy thunderstorms in these drainages via Lone Pine Creek and Penal Gulch Creek. These sediments would then be deposited in the Salmon River which could cause a slight decrease in fish numbers by reducing the productivity of part of the river.

This potential impact could occur until after watershed conditions improve in each drainage. Improvement is predicted to occur within five to fifteen years after the proposal is implemented.

Herd and Jimmy Smith Lakes. Little change in fish populations of Herd and Jimmy Smith Lakes is expected if proposed grazing systems are implemented. The effect on Herd Lake would be beneficial. Less sediments would be deposited in Herd Lake in future years because of decreased livestock use in Unit I of the Herd Creek Allotment. A slight short-term increase in sedimentation of Jimmy Smith Lake would result from increased grazing use in the Big Lake pasture of the East Fork Allotment.

This adverse impact on Jimmy Smith Lake should be eliminated before the end of fifteen years as predicted vegetative and soil conditions improve in the watershed.

Projects. The proposed sagebrush chemical treatment project in the Bald Mountain Allotment (1,000 acres) includes land fairly close to the Salmon River, Rattlesnake Creek, and Centennial Creek. A short-term impact on aquatic life could occur if the chemical mixture were not properly applied or if toxic materials entered one of the perennial streams because of an accident. Depending on the chemical formulation, 2,4-D can cause mortality to trout at concentrations as low as one part per million. Also, there would be a loss of riparian habitat which would have an adverse impact on fish populations.

A cattle trail to the Salmon River three-quarters of a mile west of Spud Creek is proposed to allow livestock to water while grazing in this area of the Spud Creek Allotment. This development would result in loss of some riparian habitat in the immediate vicinity of the trail as well as increased animal wastes in the Salmon River. Cattle would be concentrated in the watering area which could result in more streambank trampling and consumption of vegetation than is now occurring. Construction of this trail could result in increased sedimentation of the Salmon River. Erosion could also be increased at the watering site. Sediments from this development would impact some of the most important fish habitat in the unit. Fish production could be reduced a small amount in areas where sediments settle on the river bottom and reduce biological productivity.

Burning is proposed for 600 acres in the East Fork Allotment, including parts of Corral Creek and Jimmy Smith Creek watersheds above Jimmy Smith Lake. Jimmy Smith Lake supports an important winter fishery, and native trout spawn in the lower reaches of each stream just above the lake. Effects on fish habitat from the project could include loss of streamside vegetation, increased short-term sedimentation of the streams and lake, and possible addition of nutrients to these waters.

Nutrients added to Jimmy Smith Lake would result in greater growth of aquatic plants, but this effect would be short term in nature and should not adversely affect the trout population in the lake. Loss of vegetative bank cover and increased sedimentation of either stream would reduce trout production for a few years.

Two miles of protective fencing are proposed along the south side of Road Creek to improve fish habitat in the Road Creek Allotment. A few water gaps would be left on the south side of the stream. Some increase in erosion would occur where water gaps are placed due to concentration of animals in these areas. However, a larger decrease in sedimentation from the protected areas would result in an overall benefit in reduced sedimentation. Streambank vegetation would be improved along Road Creek and streambanks would become more stable resulting in increased numbers of trout in this part of the stream.

The proposed Chicken Creek chaining and seeding project in the Road Creek Allotment (600 acres) could increase sediments into Chicken Creek, Road Creek, and the East Fork of the Salmon River. Fish populations in Road Creek could be further reduced a small amount because most sediments would probably be deposited in the low-gradient areas of this stream.

Summary

Projected habitat conditions for fish-producing streams after fifteen years should the proposal be implemented are compared with present conditions in TABLE 3-8. A total of 12.7 miles of stream habitat would improve with the proposed action (8.5 miles from fair to good and 4.2 miles from poor to fair). The other 69 miles would remain in the same condition. Where habitat conditions are classified as either fair or poor and are not expected to improve with the proposed action (51.5 miles - 63% of habitat), fish production would remain at reduced levels in those streams.

Most of the important anadromous fish habitat of the East Fork and Salmon River would remain in the same condition because of present and proposed patterns of grazing use. Two miles of lower Thompson Creek and one mile of lower Lake Creek would change from poor to fair condition, resulting in increased production of steelhead and other game species.

In streams with populations of resident fish only, 8.5 miles of habitat would improve from fair to good condition (Thompson and Bruno Creeks). Habitat conditions of part of Road Creek (where fenced) would improve from poor to fair condition. Populations of resident species should increase in these three areas because of improved habitat conditions.

Adverse effects on aquatic habitat from implementing the proposed grazing systems would be most severe during the first grazing cycle.

TABLE 3-8

PRESENT AND ESTIMATED HABITAT CONDITIONS OF FISH-PRODUCING STREAMS ON NRL WITHIN THE CHALLIS UNIT WITH THE PROPOSED ACTION

Habitat Type	Estimated Miles by Habitat Condition (Percent in Parenthesis)					
	Present (1975)			Proposed (1990)		
	Good	Fair	Poor	Good	Fair	Poor
Anadromous & Resident Fish						
Stream or Creek						
Salmon River	14.0	3.5		14.0	3.5	
East Fork	1.0	4.0o		1.0	4.0	
Herd		3.5			3.5	
Lake			1.0		1.0	
Big Lake			1.2			1.2
Big Boulder		.8			.8	
Little Boulder		1.3			1.3	
Squaw			.2			.2
Thompson			2.0		2.0	
Challis	.5			.5		
Totals	15.5	13.1	4.4	15.5	16.1	1.4
	(47)	(40)	(13)	(47)	(49)	(4)
Resident Fish Only						
Stream or Creek						
Lake		2.8			2.8	
Road		.8	7.2		2.0	6.0
Big Lake			.3			.3
Corral		.5			.5	
Squaw			1.3			1.3
Horse Basin			4.0			4.0
Mosquito			1.7			1.7
Bear			1.1			1.1
Spud			1.2			1.2
Warm Springs		1.5			1.5	
Thompson		5.5		5.5		
Pine		1.8			1.8	
Garden	.5			.5		
Mill		3.6			3.6	
Birch			2.0			2.0
Bayhorse		.3	2.0		.3	2.0
Bruno		3.0		3.0		
Sullivan	1.5			1.5		
French			1.4			1.4
Lyon		1.2			1.2	
Kinnikinic		3.5			3.5	
Totals	2.0	24.5	22.2	10.5	17.2	21.0
	(4)	(50)	(46)	(22)	(35)	(43)
Challis Unit Totals	17.5	37.6	26.6	26.0	33.3	22.4
	(21)	(46)	(33)	(32)	(41)	(27)

Increased use would be made in smaller areas with existing vegetative and soil conditions. Because of this some short-term reductions in fish populations would be expected due mostly to loss of vegetative bank cover, heavy trampling of streambanks resulting in erosion and loss of undercut banks used by fish, increased sedimentation from upland areas, and reduced production of desirable aquatic organisms used for food. These reductions in fish populations of some streams would last until one or more grazing cycles are completed and vegetative cover and soil conditions have improved.

Short-Term Impacts. Short-term adverse impacts on fish populations are defined as those expected to last approximately five years or less, whereas long-term impacts would continue for longer than fifteen years after implementation of the proposed action. The same impact on fish populations, sedimentation of streambeds for example, could be short-term in one stream but long-term in another depending on the proposed livestock use.

Fish populations are expected to be reduced in Herd, Big Lake and Birch Creeks. Data are not available to estimate the magnitude of loss caused by the following adverse effects on fish habitat discussed earlier in this section.

The Lake Basin Pasture (Lower Unit 2) of the Herd Creek Allotment is classified in poor range condition with a critical soil erosion condition. Treatments A and B would cause continued sedimentation of Herd Creek, loss of streamside vegetation, increased streambank erosion and increased animal wastes. Short-term impacts on fish habitat would occur in Birch Creek, located in the Garden Creek (South) Allotment,

which is in fair range condition but has a downward trend. Treatment A and B would result in increased sedimentation, loss of streamside vegetation, and increased bank erosion of Birch Creek. These same impacts would be expected to occur in Big Lake Creek (East Fork Allotment) due to increased use over the two-year grazing system.

Accelerated erosion from intermittent Spar Canyon Creek, particularly during high intensity thunderstorms, would cause increased sedimentation of fish habitat in the lower East Fork. This predicted short-term effect on fish habitat would be due to increased use during Treatment A. A slight decrease in fish production would be expected in the lower East Fork until vegetative ground cover improves in the Spar Canyon watershed. Increased sedimentation from Lone Pine Creek and Penal Gulch could also impact fish habitat in the Salmon River in a similar way.

Increased sediments from overland flows are expected in the Jeff's Creek pasture (North Garden Creek Allotment) because of the proposed livestock use during Treatment A. Range condition in this pasture is classified as poor with a downward trend. Fish habitat of Challis Creek would be adversely affected by increased sedimentation, which could result in a slight decrease in fish populations for several years.

If predicted increases in vegetative cover and better soil conditions occurred, these short-term adverse impacts on fish habitat and fish populations would be mitigated. Short-term loss of fish production would probably be most significant in Herd Creek because of its importance as habitat for populations of both anadromous and resident game fishes.

Long-Term Impacts. Long-term impacts on fish habitat and populations are predicted to occur in Road Creek and some of its tributaries. The effects of livestock grazing on fish habitat and water quality were discussed earlier under sections on Treatments A and B.

For the Challis Unit in general, streambanks may become revegetated as discussed under the Soil and Water Resources section in this chapter. However, problems with maintaining adequate streambank vegetation and streambank stability are anticipated in upper Road Creek and several tributaries because of the proposed increase in livestock use shown in TABLE 3-7.

There are over nineteen miles of fish-producing habitat in the Road Creek watershed (about fifteen miles adjacent to NRL). About seven miles of perennial headwater streams do not produce fish, but have a strong influence on habitat conditions in downstream areas. Habitat conditions are expected to remain in poor condition in 12.8 miles and be in fair condition in about two miles adjacent to NRL. Fish populations are predicted to decrease slightly due to the proposed action, but data are not available to estimate the approximate amount. Cutthroat trout in Upper Road Creek may be westslope cutthroat, a declining subspecies, and this population would decline slightly due to adverse habitat changes.

VISUAL RESOURCES

The Visual Resource Management (VRM) units and VRM classes discussed in Chapter 2, and BLM's Visual Resource Contrast Ratings Manual 6320 were used to provide a basis for measuring impacts of the proposed actions on the visual resources of the Challis Unit.

The management units and VRM classes are overlayed on a map showing pastures and proposed support actions (see large-scale map in back cover). VRM classes by allotment are shown in TABLE 2-27.

There are three of six possible VRM classes in the Challis Unit. Generally, these classes provide management objectives which can be used to assess the impact of an action by relating the modification and resulting visual contrast rating to the basic elements of form, line, color, and texture.

The objectives of the VRM class are: Class II - modifications to the basic elements should not be evident; Class III - modifications in the basic elements may be evident but should remain subordinate; Class IV - modifications may subordinate the original landscape character but must reflect a natural occurrence.

Basic landscape elements present in the Challis Unit are: Colors - vegetation (greens, greys, yellows), soil and rock (reds, browns, greys, tans, white); Lines - as formed by changes in vegetation, layering of soils and rocks, drainage patterns, ridge lines; Texture - attributed to vegetation (individual plants or contrasting stands), rock outcrops,

erosion patterns; and Form - as influenced by shape of the land surface (rolling or folded), openings or changes in vegetative patterns, or structures placed in the landscape.

Livestock grazing and support activities could impact all three VRM classes. The severity of the impact on the landscape from any action would depend on the class in which the action occurs.

The proximity of the viewer to the modification, including distance, lighting, angle, or length of time in view, influence the level of impact. In most of the unit there are few views that are limited by high vegetation except in portions of the proposed Thompson Creek, Bruno Creek, Squaw Creek, and Sullivan Creek Allotments. There is some screening by low relief features and vegetation, but general views of the landscape are unlimited because most of the national resource lands (NRL) are in the uplands.

Basically, the modifications as a result of the proposed action would be (1) vegetation being removed or added, (2) soil removed or rearranged, (3) structures added, and (4) water added or removed.

Specific modifications to the basic elements as the result of specific proposed actions are described in the following discussion: Unless VRM objectives are followed in designing each action, potential for conflict with these objectives exists, but the severity of impacts would be minimal. Any of the proposed actions (livestock grazing and installation of improvements) can be accomplished to meet VRM objectives over a period of time.

At this time it is possible to discuss the impacts of livestock grazing and the development of improvements on visual resources only

in general terms except for vegetative manipulation projects. The final on-site locations have not been determined for each improvement in the proposed action, nor have the pasture fences been located on the ground.

There are no improvements proposed for the Bruno Creek and Thompson Creek Allotments, and only one mile of fence is proposed for the Sullivan Creek Allotment.

In the remaining allotments, all the various types of actions would occur except for vegetative manipulation and these projects are discussed specifically later in this section.

Each of the major projects is discussed as it impacts the form, line, color, and texture of the naturalistic landscape. The projects have also been rated to determine the visual contrast rating. With no mitigation, a typical project of each type would likely have its greatest impact at the time of initial development, and the impact would gradually diminish.

Contrast Ratings As They Apply to Visual Resource Mangement Classes

VRM Class	Standards
Class II	The degree of contrast for any one element should not exceed 2 (moderate) and the total contrast rating for any pasture may not exceed 10.
Class III	The degree of contrast for any one element should not exceed 2 (moderate) and the total contrast for any feature may not exceed 16.
Class IV	The total contrast rating for any feature should not exceed 20.

Pastures

The proposed action would provide for the establishment of livestock grazing pastures in all allotments which collectively have 53 pastures. Livestock would be grazed intensively on 321,481 acres or 96% of the NRL in the unit. The contrast that would develop between pastures as they are grazed could modify the basic elements of line, color, and texture, but such modifications would be very subtle. A line would be created by the resulting change in color and texture between two adjacent pastures as the density, species composition, and amount of forage changed through the grazing cycle (FIGURE 3-1). The most obvious contrasts would develop between rest and use pastures, and these contrasts would be most evident at the end of the grazing season.

FIGURE 3-1 LINE OR "FENCELINE CONTRAST" WOULD BE CREATED BY THE RESULTING CHANGE IN COLOR AND TEXTURE BETWEEN TWO ADJACENT PASTURES.

By the end of the initial fifteen-year period, contrasts may be lessened as vegetative conditions equalize within the pastures in each allotment.

The changes in color of the pastures, as they are grazed during the season and throughout the grazing cycle, brought about by increased plant density or changes in species composition, would have variable impacts depending on the location of the grazing unit in the overall landscape, i.e., the bare soil coloration that has resulted from many years of weathering may be altered by vegetative growth introduced by the proposed action.

The level of utilization during each grazing season would also affect the degree of pasture contrast.

In allotments with high vegetation (trees), Thompson, Bruno, Squaw, and Sullivan Creeks, the pasture contrast would not be evident to the viewer.

In applying the visual resource contrast rating to pasture development, there is the potential of reaching a vegetative feature score of 7 within a range of 0 to 30. This contrast rating implies that as pastures are grazed during the year and throughout the grazing cycle there should not be any conflict with visual resource management objectives for any of the three classes that exist on the Challis Unit.

In some allotments, the proposed action includes the grazing of more AUMs in certain pastures than are being grazed presently. This could result in reduction of both plant size and density, especially during the early years of implementation. Where such conditions do occur, the contrast from the heavily cropped vegetation, exposed soils, and possibly accelerated soil movement would provide greater contrasts between use and rest pastures. There could also be landscape scarring from soil erosion.

Impacts from pasture contrast would be most evident directly along fences dividing the pastures.

Fences

The direct impact from fence construction is the placement of an unnatural line in the landscape. The impact of the fence (posts and wires) is minimal, but the line would be accentuated if brushed out. Any fence lines brushed across the slope, especially where it cuts an erosion pattern, would be very obvious. Any "skylining" of fences on ridgetops would also make the structure more readily visible in the scene (FIGURE 3-1).

Fences dividing grazing pastures become the focal point of the color and texture contrasts discussed under Pastures. There would be 86 miles of fence constructed, disturbing 86 acres. In addition, 12 miles of fencing would disturb 60 acres at spring heads and catchments.

Fences would potentially have contrast ratings of 5 for land surface features, 10 for vegetation features, and 5 for structures, with a total of 20 points within a range of 0 to 90. The most restrictive class in the unit is Class II, with the objectives that the degree of contrast for any one element not exceed 2, and the total contrast rating for any feature not exceed 10. This objective can be met if fence lines are not "brushed" or "skylined."

Spring Development and Improvement

These actions involve the removal of vegetation and soil disturbance, with a resulting modification of color and texture. Impacts of

these developments would normally be very localized. The addition of fences to protect spring heads from livestock grazing would further modify the basic element of line. Fencing would provide a more pronounced modification of color and texture by virtue of the luxuriant stand of vegetation that normally becomes established within these spring enclosures. Impacts would be greater initially from the disturbance and also in later years as the heavy vegetative growth becomes established.

The impact of spring improvements would likely be less than new developments since the landscape has already been modified. Fifty-four new springs would be developed. Fifteen existing spring developments would be improved. New developments and improvements would disturb 21 acres.

The visual contrast rating of these improvements would potentially be 3 for land surface features and 10 for vegetative features. These contrasts would meet the most restrictive objectives of Class II, but since most of the spring heads would be fenced the contrast rating may exceed the objectives because of the added impact of the fenced exclosures. See the discussion of fences for the contrast rating associated with fence construction.

Water Catchments

These projects involve the removal of vegetation, soil movement, and the addition of water in the landscape. As a result, the basic elements of color, texture, form, and line would be modified. The degree of contrast among the elements would vary during the season depending on whether the ponds were full, partially full, or empty. As a result of

excavation to construct the catchment, an opening would be created in the natural vegetative pattern and considerable soil movement may be necessary. Both these actions would modify the landscape form (FIGURE 3-2).

FIGURE 3-2 WATER CATCHMENTS INVOLVE VEGETATIVE REMOVAL, SOIL DISTURBANCE AND ADD WATER TO THE LANDSCAPE.

The visual impact of the fenced catchment would be greater than the unfenced because of the resulting heavy vegetation that would likely become established within the exclosure. This would further modify the landscape by creating an unnatural contrast of form, line, color, and texture between the vegetation inside and outside the exclosure. Eight catchments would be constructed, with a total of 40 acres disturbed.

Water catchments have the potential for reaching contrast ratings of 20 for land surface features and 20 for vegetative features. Neither of these feature scores can meet the objectives of Class II, III, or IV, all of which are present in the Challis Unit. The contrast rating

associated with fencing the catchments also should be considered in assessing the impact of these projects.

Pipelines

The installation of pipelines involves some vegetation removal and soil disturbance. The method used to install the pipeline would determine the amount of modification of line. Depending to some degree on the width of the corridor created by vegetative removal, some contrast in color and texture would be created. Where pipelines are buried and cuts are made across areas of barren soil, the disturbance to the surface color could create a line that may be evident for years since that color is probably the result of years of weathering and chemical action. The pipelines in the proposed action would be installed using a "ripper tooth." This method has a minimal impact on vegetation and soil if it is not necessary to blaze out a road for the machine.

Because of the need to locate pipelines to obtain gravity flow from the source to the water storage tank or trough, there is very little opportunity to design these improvements consistent with natural lines (FIGURE 3-3). Thirty-nine miles of pipeline are proposed. Installation of the pipeline would disturb 39 acres.

Pipelines may result in visual contrast ratings of 10 for land surface features and 10 for vegetative features. Both features' scores can meet the most restrictive objectives of Class II, especially if the width of the pipeline corridor is kept to a minimum in order to reduce the amount of vegetation and soil disturbance.

FIGURE 3-3 PIPELINES MUST BE PLACED TO ALLOW GRAVITY FLOW FROM THE SPRING SOURCE TO A TROUGH OR STORAGE TANK.

Storage Tanks and Troughs

Installation of tanks or troughs involves vegetation removal, soil disturbance, and places a structure in the landscape. As a result, there would be modifications of the basic elements of form, line, color, and texture. Changes in each element would vary in severity according to the amount of vegetation removed and the soil disturbed to level the ground for the tank or trough. The change in landscape form would result from the addition of a structure with variable impacts according to configuration, location, and color. Nine troughs and eight storage tanks would be installed, disturbing a total of two acres.

As with the spring development, the tank or trough is a localized point impact. However, since both the spring and tank are normally connected by a pipeline of variable length, the combination of these improvements can considerably modify the naturalistic landscape. The

shorter pipelines connecting a trough/stock tank and spring would be most obvious if they are all viewed from a single point.

Both these types of improvements could have contrast ratings of 7 for land features, 3 for vegetative features, and 12 for structures. The structure feature score would exceed the objectives of Class II.

Roads and Trails

There is one 3/4-mile-long road in the proposed action. Roads or trails result in the same impacts as a pipeline that is graded, but usually to a greater degree. Since more right-of-way width is required, there would be more vegetation removed and possibly much more soil disturbance if large cuts were required. The road or trail would place a line, provide a color contrast, and may change the texture if large cut or fill slopes are exposed. Unlike pipelines, road locations can be designed to "lay lightly" on the landscape if the most direct route from point to point is not followed.

In addition to the planned 3/4-mile-long road, it is assumed that most projects would require some type of low standard access road or trail. In the past, such roads have received continued use for recreation travel and by livestock operators. These low standard roads represent an unnatural line due to vegetation removal and soil exposure, and are often more subject to erosion because adequate drainage was not included in their construction. Where erosion does occur, the impact of these roads would be more evident.

As with pipelines, where the land surface is altered, roads may cut through soils or rock formations of unique coloration. The scar would

last for years since the coloration results from years of weathering and chemical action (FIGURE 3-4).

FIGURE 3-4 ROADS CUT THROUGH SOILS OR ROCK FORMATIONS WITH UNIQUE COLORATION WOULD LEAVE A PERMANENT SCAR ON THE LANDSCAPE.

Roads could potentially exceed the objectives for Class II with feature scores in excess of 10 for landscape and vegetation. The "unplanned" project roads and trails would be least likely to meet objectives. The travel by commercial vehicles off existing roads and trails could scar the landscape.

Vegetative Manipulation

These projects would occur in three allotments: a 600-acre burn in the East Fork Allotment, a 1,000-acre sagebrush spray in the Bald Mountain Allotment, and a 600-acre chaining in the Road Creek Allotment.

All these proposed treatments would modify basic elements of form, line, color, and texture from the time of the initial action through and beyond the period when planted vegetation grows or native vegetation becomes reestablished.

Boundaries of each project would form a line by the contrast with the surrounding vegetation. The period immediately following treatment would represent the most obvious contrasts with the resulting charred sagebrush in spray or burn projects and exposed mineral soil in the plow/chain projects.

Texture change would result from the contrast between the treatment area and the surrounding vegetation. The project would modify form by creating openings in the natural vegetative pattern.

The color of the treatment would be in sharp contrast to the adjacent vegetation, especially in areas with heavy sagebrush stands (FIGURE 3-5).

FIGURE 3-5 CONTRASTS BETWEEN FIELDS ARE THE RESULT FROM SPRAYING AND PLOWING TO REMOVE SAGEBRUSH.

The visual resource contrast ratings applied directly following each of these treatments would likely exceed the objectives of Class II. Both the burning and chaining would exceed objectives of all three classes if rated immediately after the action. Normally, the visual contrast resulting from a sagebrush spray is not as great as the contrast associated with a burning or chaining. In the case of spraying the greatest contrast would be exhibited in the spring with the green growth of vegetation outside the treated area. As the season progresses plants tend to cure with the coloration changing to grey or greenish-grey, and the treated plants tend to blend more closely with surrounding vegetation.

Also, if any of the treated projects are rated after the first growing period following treatment the stark contrast of charred vegetation on the burn or exposed soil in the chain area would be somewhat offset by new vegetative growth. The degree of contrast that would be evident through the fifteen-year period would relate directly to the species composition and density that becomes established. Where such treatments occur in heavy sagebrush stands the contrast between sagebrush and grass/forb stands would remain fairly evident for a long period.

As was mentioned in the general discussion, the grazing of the 53 proposed pastures would create contrasts especially between the Treatment A and B (use) and Treatment C (rest) pastures. In 24 of the 53 proposed pastures, the contrast during the initial years of plan implementation may be greater than in the remaining pastures because the AUMs proposed exceeds the AUMs presently available. The heavy livestock use

may cause severe contrasts through closer vegetative cropping and plant removal. The exposure of bare soil to possible erosion could also scar the landscape.

Summary

The proposed action would indirectly affect the visual resources on 95% of the NRL in the Challis Unit by the grazing of livestock in 53 pastures. With the exception of contrasts that may develop directly along the fence lines separating each pasture, the changes in the basic elements of form, line, color, and texture would be subtle.

However, in the pastures where the proposed action calls for the introduction of more AUMs of use than are presently available, the use could result in more noticeable vegetative contrast than in those pastures with the necessary forage. The application of the grazing system over the fifteen-year period would have less chance of establishing a uniform color in the over-obligated pastures.

The improvements proposed would disturb 250 acres and the vegetative manipulations would directly impact 2,200 acres for a total of 2,500 acres (1%) of the total NRL in the unit.

The initial or short-term impacts would be reduced over time by site rehabilitation measures and the revegetation of sites burned, sprayed, and chained. The success of rehabilitation and the natural or artificial revegetation process would have direct implications on the long-term impact of each action. For each of the proposed improvements there are actions that can be taken to reduce the visual contrast feature scores, thus lowering the impact in the development process.

Since the direct impact to the visual resources through the specific actions (except livestock grazing) would only impact 1% of the total land area, and the improvements are extensively located in the Challis Unit, the cumulative impacts would be negligible.

RECREATION RESOURCES

General

Implementation of the proposed action would impact recreation resources and use opportunities as follows:

Sightseeing

As discussed in the preceding Visual Resources Section, the naturalistic landscape would be further modified by grazing livestock and improvements.

Development of improvements may disturb geologic features such as talus slopes, rock outcrops, etc., or intrude on the natural setting of these features.

Movement of livestock between grazing pastures by truck or trailing would create localized dust conditions, affecting viewing distances for a short time.

If objectives are met, the proposed action would result in increased wildlife populations and improved opportunities for observation and nature study.

The proposed action would better distribute livestock and provide for more complete utilization of the unit, offering the public greater opportunities to view livestock and associated ranching activities.

Wildlife and wild horses would likely concentrate in the rest pastures, resulting in improved opportunities for observation.

Terrestrial Wildlife/Hunting

Proposed support actions such as spring developments, chaining, project roads, and catchments could disturb or destroy wildlife habitat by vegetative removal, which could decrease the population of some huntable species until project sites are rehabilitated. This would have a short-term impact on hunting opportunities.

Project service roads would provide more hunter access and could result in a better wildlife harvest.

With improved wildlife habitat, increased wildlife populations would result in better quality hunting opportunities. It is estimated that habitat improvement would create the potential for increased big game populations.

Waterbodies/Fishing and Other Water Sports

With the proposed objectives being met, water quality conditions would remain high or could improve, preserving the opportunity for water contact activities such as floatboating or swimming.

Improved watershed conditions could increase fish populations and improve opportunities for fishing and fish observation.

Collecting

The removal of vegetation and soil disturbance associated with the proposed actions, spring development, service roads, pipelines, etc., could improve conditions for collecting gemstones and fossil wood specimens by exposing them to rockhounds.

Project service roads would provide better access for rockhounds and on-road vehicles.

Cross-Country Travel

The proposed fences could be a barrier to cross-country travel by horseback, hiking, and off-road vehicles.

Service roads would improve access to more of the unit for off-road vehicle operators.

Back Country

The presence of livestock or the improvements to accomplish livestock distribution could conflict with recreationists seeking solitude.

Hazards

Rest pastures could be a fire hazard because of heavy vegetative growth.

Fences designed to be visually acceptable could be a hazard to cross-country travel by horseback or off-road vehicle.

Livestock trailing to and from NRL and between pastures could be hazardous due to the presence of animals on roads normally used for recreation travel.

Cattle concentration in heavily used recreation areas could result in unhealthy conditions due to animal odors and defecation.

The absence of livestock in rest pastures during the recreation season would result in less physical disturbance to recreation users and

eliminate the presence of odors and health hazards associated with grazing animals.

The fencing of spring heads to exclude animals would protect the water from pollution by trampling and defecation, possibly making such sources available for human consumption.

Specific

Most recreation opportunities in the Challis Unit are classed as extensive since they are associated with resources such as scenery, wildlife populations, and collection of gemstones and fossil wood. The site-specific impacts associated with concentrated recreation activities would be limited to use along the major water courses, the main Salmon and East Fork Rivers.

The proposed action would likely improve conditions for both extensive and intensive recreation use.

Actual site conditions, as they relate to recreation use levels and the quality of opportunities, would be affected by better livestock distribution and less concentration adjacent to recreation waters. The existing, adverse site conditions resulting from trampling, defecation, and vegetative removal would also be improved, and in some instances, totally eliminated.

Summary

The effects of the proposed action on recreation resources would generally result in short-term, adverse impacts to recreation opportunities. Over the fifteen-year period, however, disturbance of the visual

resource by livestock grazing and development of improvements would dissipate as sites were rehabilitated naturally or artificially. Landscape scars resulting from the proposed actions would be evident initially, but because of their scattered and isolated location, sightseeing opportunities would not be materially affected. Recreation opportunities directly dependent on the quality of wildlife habitat would also be adversely affected by the initial removal of 2,500 acres from habitat production. Over time, however, habitat conditions throughout the unit would improve, increasing the potential for greater animal numbers in the unit. Generally, the opportunity to hunt and view animals would be improved by the end of the grazing cycle.

Fishing habitat would be affected by the proposed action, and in turn, the recreational opportunities for fishing and fish viewing would be impacted. Improved livestock management would have a beneficial effect on aquatic habitat with the potential for more fish in the various rivers, streams, and lakes. More fish would represent an opportunity for increased consumptive and nonconsumptive recreation activities.

TABLE 3-9 shows the estimated increase in recreation use of the Challis Unit that would result from implementing the proposed action.

Big game hunter days are based on the following assumptions: (1) the amount of available forage would increase in the Challis Unit, (2) a percentage of this increase would be allocated to wildlife, (3) big game populations would be greater than in 1974 by the numbers predicted in the Wildlife Section, and 30% of the increase would be harvested, and (4) increased harvest would result in more total hunter days in the field (Oregon Big Game Resource on Economic Evaluation, 1973).

TABLE 3-9

ESTIMATED INCREASE IN RECREATION USE IN THE CHALLIS UNIT AT THE END OF THE 15-YEAR PERIOD WITH THE PROPOSED ACTION 1/

Activity	Present	End 15-Year Period
Fishing	10,000	10,000
Hunting	20,000	22,100
TOTAL	30,000	32,000

1/ The hunting and fishing projections are based on condition anticipated for the Challis Unit. Hunter days have been calculated using estimated increases in big game numbers as reported in the Wildlife Section of Chapter 3. Actual increases in game will be dependent on the allocation of additional forage to wildlife. Hunter days are based on the assumption that 30 percent of the increase would be harvested. The fishing days estimate is based on the assumption that aquatic habitat improvement and improvements made downstream for anadromous fish would overturn the downward trend and stabilize fishing opportunities by the end of the 15-year period.

Upland game bird populations would also increase with improved habitat conditions at the end of the fifteen-year period. The percentage increase for big game hunter days was also applied to upland game birds.

Fisherman days have been on the decline in the Challis Unit. It is assumed that the necessary actions to save anadromous fish runs would be taken. Also, the proposed action would improve aquatic habitat. The combination of these actions would stabilize the quality of the fishery, and rather than continue the current decline, fishing days at the end of the fifteen-year period would be the same as 1974.

AGRICULTURE

The proposed action would result in impacts on farming, livestock grazing and forest management. Unlike most other sections of Chapter 3, because of the non-site-specific nature of agriculture, the "general" and "specific" format has not been adhered to and subjects in the agriculture category are discussed separately.

Farming

The proposed action would have no measurable effects on farming or crop production. The later turnout or opening dates for grazing proposed in some of the AMPs would result in livestock being held on private lands for longer periods in early spring. Irrigation for forage crops vital for winter feeding usually begins in early May and continues through September. In some instances, individual operators could have to defer irrigation until cattle are moved to the spring ranges which would shorten the growing season for forage crops. The effects of a shorter irrigation season on hay production have not been estimated and impacts have not been quantified. Reduced hay production would be an adverse impact. It is believed impacts on crop production would be of minor consequence.

Livestock Grazing

The proposed action would result in both beneficial and adverse impacts on livestock grazing. The level of grazing use on NRL specified in the proposed AMPs directly affects livestock numbers and indirectly affects livestock production. Levels of grazing use proposed in the AMPs and the six-year average use is shown in TABLE 3-10, by allotment. For the Challis Unit as a composite, the 19,889 AUMs of livestock grazing under the proposed AMPs represents an increase of 2,463 AUMs over the six-year average use from 1970 to 1975.

The proposed action would result in increased levels of grazing use in ten allotments used by 33 operators, and decreased levels of grazing use in six allotments used by 20 operators. Some livestock operators have use in more than one allotment, so decreases in one allotment may be offset by increases in another. The differences in grazing use are variable. For example, in the Garden Creek proposed management plan, 11 operators would share a decrease of 23 AUMs. In the Thompson Creek Allotment, one operator would experience a decrease of 131 AUMs. In the Warm Springs Allotment, one operator would experience an increase of 2,198 AUMs. The economic and social impacts are discussed in Socio-economic Conditions.

In some allotments livestock would be more concentrated during grazing periods and would have to graze virtually all of a pasture, including the steeper areas which would otherwise be lightly grazed. After the palatable and most desirable plant species were grazed, livestock would then be required to graze the less desirable species.

TABLE 3-10

LIVESTOCK GRAZING BY ALLOTMENT

Allotment	6-Yr. Average Active Use AUM's	Proposed Use Under AMP's AUM's	Difference AUM's
Bald Mountain	617	660	+ 43
Bruno Creek	125	67 1/	- 58
East Fork	503	433 3/	- 70
Garden Creek	930	907	- 23
Herd Creek	1,222	1,035	- 187
Pine Creek	181	185	+ 4
Red Lake	1,092	1,395	+ 303
Road Creek	582	614	+ 32
Round Valley	373	602	+ 229
San Felipe	3,287	3,387	+ 100
Split Hoof	186	282	+ 96
Spud Creek	250	265	+ 15
Squaw Creek	468	364	- 104
Sullivan Creek	88	104	+ 16
Thompson Creek	140	9 2/	- 131
Warm Springs	7,382	9,580	+ 2,198
Total AUM's	17,426	19,889	+ 2,463

1/ Average use for three years.
2/ Nine AUM's every other year.
3/ Average of 419 and 446.

Pastures grazed only after seed has ripened for key plant species would require livestock to graze plants which are less palatable and to some extent less nutritious. Under continuous or season-long grazing, livestock typically show increasing weight gains from early spring to late spring, then decreasing rates of gain through summer and fall. In the first few years of grazing under AMPs, rates of gain could be somewhat lower for livestock when compared to present management. In the longer run, the AMPs should result in higher percentages of palatable species for livestock with greater rates of weight gain than under the present management. Neither the short-run decreases nor the long-run increases in rates of weight gain can be quantified at this time. It is believed that weaning weights of cattle would not be much affected in the short run, but would increase slightly after the AMP has been implemented for several years. The proposed action would tend to stabilize levels of grazing use in the unit as a whole, a long-term beneficial impact.

Higher concentrations of livestock at a time when bulls are turned out should contribute toward a better calf crop. The proposed action should not affect death losses.

Livestock management as a result of the proposed action would entail moving cattle more often than under the present management. Construction of the several kinds of range improvements to implement the AMPs would require operators using NRL to maintain the improvements. It is estimated that about 200 man days of labor would be required annually for livestock management and maintenance.

Summary

The proposed action would have little adverse impact, if any, on hay production.

Both beneficial and adverse impacts would occur in the livestock grazing industry. For the livestock operators in the Challis Unit as a whole, there would be a net increase of 2,463 AUMs grazing use. Grazing use would increase in ten allotments and decrease in six. In the first few years of grazing under AMPs, livestock weight gains could be somewhat lower than under present management. However, proposed AMPs should result in better weight gains in the long run and more palatable forage species for livestock. Weaning weights should be little affected. The proposed action would tend to stabilize the level of grazing use in the unit, lending stability to ranch units.

Livestock management through the proposed AMPs would entail moving livestock more often than present management, and in some cases longer distances. Construction of range improvements would require livestock operators to maintain these in a serviceable condition. Both of these would require additional labor.

FOREST MANAGEMENT

The proposed action would indirectly affect forest management. Livestock do not normally graze stands of conifers but do seek shade, particularly the edges of timber stands. The increased concentrations of livestock that would result from implementing the AMPs would lead to some grazing of timber stands. After livestock have grazed the more palatable and accessible plant species in a pasture, less desirable plants and areas would be grazed. Where conifer stands occur in a pasture, grazing of interspersed grasses and forbs within the timber stands would be expected. Livestock grazing within the timber stands would result in some soil compaction through trampling and injury or death of conifer seedlings (0"-0.9" diameter) or saplings (1.0"-4.9" diameter). Grazing would probably not decrease the long-term production of wood fiber. Livestock grazing would probably have the greatest impacts during the first few years following implementation of the proposed AMPs. Although grazing represents an adverse impact on timber management and production, long-term productivity would appear to be unaffected.

About 620 acres of commercial timber in the Warm Springs Allotment would be adversely affected by the proposed livestock management. Recently harvested areas and an area proposed for a future timber sale would be difficult to regenerate by natural means. A projected decline in forage production in this allotment would very likely result in poor revegetation of timber due to continued livestock grazing. Seedlings would compete with grasses and forbs for moisture and space and would be

subject to damage from livestock trampling. Long-term wood production would probably be reduced, but quantification is not possible at this time.

The Bruno Creek Allotment is about 85% timber. However heavy concentrations of livestock would not result from the proposed action. Several timbered areas in the allotment have been selectively harvested and pinegrass is now abundant. The proposed action would result in increased use of these cut over areas, but impacts on forest management would be slight.

Livestock management as proposed would increase livestock grazing use in timber stands and cut over areas. Grazing would adversely affect seedling establishment and growth, particularly reducing the rate of revegetation on harvested areas. Although these are adverse impacts, the impacts cannot be quantified at this time. It appears long-term production of wood fiber would be little affected.

CULTURAL RESOURCES

General

The proposed grazing of domestic livestock could result in adverse impacts to 184 cultural resource sites, or 71% of the known 259 sites within the Challis Planning Unit. This includes eleven sites on private property which could receive secondary adverse impacts as a result of the proposed action. Of the 184 sites, 37 (TABLE 3-11) determined to be of National Register quality could also be affected. The Challis Bison Jump site, a National Register property, 64 known cultural resource sites on Federal or state property, and ten known sites on private property would not be affected.

The degree of impact to cultural resource sites as a result of grazing domestic livestock depends on two factors: (1) nature of the cultural resource (historical, prehistorical campsite, prehistorical lithic scatter, or rockshelter), and (2) degree of disturbance. This disturbance can be caused by one or more of seven primary activities directly related to livestock grazing:

1. Spring developments, improvements
2. Pipeline and water trough projects/storage tanks
3. Water catchments
4. Trail constructions
5. Fencing or cattleguards
6. Vegetative manipulation (specifically chaining)
7. Trampling

TABLE 3-11

PREDICTED IMPACTS TO NATIONAL REGISTER ELIGIBLE SITES
IF PROPOSAL IS IMPLEMENTED

Allotment	Trampling	Streambank Erosion	Gully/Rill Erosion	Proposed Projects
Red Lake				
10-CR-71 1/ 2/	X	X	X	
10-CR-98	X		X	
10-CR-339				
10-CR-363				
Herd Creek				
10-CR-282	X	X		
10-CR-499	X			
Road Creek				
10-CR-437	X			
Round Valley				
10-CR-439				X
San Felipe/Peck Canyon				
10-CR-152	X			
10-CR-176	X			
10-CR-435				X
Warm Springs I				
10-CR-69				X
10-CR-515				X
10-CR-70				X
Warm Springs II				
Warm Springs III				
10-CR-74	X			

1/ Idaho State Site Survey Number.
2/ Refer to TABLE 2-3 for types of sites.

TABLE 3-11 (cont.)

PREDICTED IMPACTS TO NATIONAL REGISTER ELIGIBLE SITES
IF PROPOSAL IS IMPLEMENTED

Allotment	Trampling	Streambank Erosion	Gully/Rill Erosion	Proposed Projects
North Garden Creek				
South Garden Creek				
10-CR-361	X	X	X	X
Bald Mountain				
10-CR-344	X		X	
10-CR-463	X	X		
10-CR-423				X
10-CR-424				X
10-CR-455				X
Thompson Creek				
Split Hoof				
10-CR-103	X	X		
10-CR-118	X	X		
10-CR-359				X
10-CR-414				X
10-CR-450				X
10-CR-451				X
10-CR-513				X
Spud Creek				
10-CR-456	X		X	
10-CR-427	X			
10-CR-428	X			
10-CR-429	X			
10-CR-430	X			
Pine Creek				
East Fork				
10-CR-92	X			
10-CR-467				X
10-CR-358				X

TABLE 3-11 (cont.)

PREDICTED IMPACTS TO NATIONAL REGISTER ELIGIBLE SITES
IF PROPOSAL IS IMPLEMENTED

Allotment	Trampling	Streambank Erosion	Gully/Rill Erosion	Proposed Projects
Sullivan Creek				
10-CR-106	X	X		

One or more of three secondary geologic processes which are accelerated by domestic livestock grazing could also disturb cultural resource sites:

1. Streambank and river erosion
2. Gully erosion
3. Sheet or rill erosion

The seven primary adverse impacts to cultural resources could result in:

1. Disturbance or loss of horizontal cultural deposits
2. Disturbance or loss of vertical cultural deposits
3. Disturbance or loss of natural sedimentary deposition
4. Disturbance or loss of paleoecological data

The disturbance of horizontal cultural deposits may result in the loss of intra-site activity patterns and surface features (i.e., historical structures or foundations, or prehistoric structures, hearths, middens, activity areas, etc.)

The disturbance of vertical cultural deposits could result in the loss of the chronological sequence of past natural and cultural deposits, subsurface features and activity areas.

The three secondary adverse impacts to cultural resources are the effect of loss of ground cover or overgrazing in a particular drainage basin which increases overland flow during peak periods of runoff or during intense summer storms. Where livestock use is heavy and streamside vegetation is lost, this combination of factors leads to erosion of gullies and rivers and banks. Where cultural resources occur along streams, rivers, or gullies, these physical processes result in the

collapsing of cultural deposits into drainage channels. The amount of cultural material lost is dependent on the depth of the site and the degree of erosion. If channel instability continues, the entire cultural resource could eventually be destroyed. Sheet or rill erosion can result in removal or displacement of natural sedimentary deposits and the disturbance of any cultural material associated with the deposit. Equally important, however, is the redisposition of sediments which may bury other cultural resources.

Specific

Allotment-specific cultural resource sites and types of impacts predicted to occur if the proposed action is implemented are indicated in TABLE 3-12. Impacts would be attributed mainly to trampling, fencing, water developments, trailing, and construction. All four of these factors could result in destruction and damage to artifacts and the physical alteration of sites. The limited amount of available information relating to such sites prohibits quantification of adverse impacts.

Summary

Proposed improvements would result in the disturbance or destruction of nine known prehistoric cultural resource sites and the disturbance of four prehistoric and three historic sites of National Register eligibility. In addition, 21 National Register eligible sites would continue to receive adverse impacts as the result of livestock trampling, streambank and gully and rill erosion, and road maintenance.

TABLE 3-12

CULTURAL RESOURCE SITES IN THE CHALLIS UNIT WHICH WOULD BE IMPACTED BY THE PROPOSED ACTION

Allotment	Prehistoric Campsite			Lithic Scatter			Quarry Workshop	Prehistoric Log Cabin	Undescribed	
	T [1]	F	W	T	Tr	C	T	T	T	F
Herd Creek	7			3			1			
Round Valley			1				1 [6]			
San Felipe/Peck Canyon	7			1						
Warm Springs Area I	7		1	2			2	2		2
Warm Springs Area II [2]	21	1	1	17			2			
Warm Springs Area III	6	1	5	3						
South Garden Creek	9 [7]							2		
Split Hoof	2			3						
Spud Creek	2 [4]		1 [3]	3						
Pine Creek					1					
East Fork	3 [5]			1						
Red Lake	4		6			1 [8]			8	

1/ T, F, W, Tr, C = Impact from trampling, fencing, water developments, trailing and construction respectively.

2/ Eight of the sites are on private property.

3/ Lithic scatters and talus hunting blinds associated with site.

4/ Talus hunting blind associated. If plan is implemented impacts could lessen.

5/ One site is on private property.

6/ Could be impacted less if plan is implemented.

7/ One site could be impacted less if plan is implemented. Three lithic scatters on NRL and two prehistoric campsites on private property.

8/ Would be destroyed.

Nineteen additional known prehistoric campsites and one lithic scatter ineligible for the National Register would also be destroyed or damaged as a result of proposed improvements. The proposed action would result in the loss of 50 known cultural resource sites and disturbance of seven others. Of the remaining 127 known cultural resource sites susceptible to damage by livestock grazing, less than ten would receive a decrease in adverse impacts now occurring. The remaining 117 or more water-related sites would receive slight to major increases in adverse impacts as the result of trampling or streambank and gully erosion, especially during the first several cycles of the proposed grazing systems. These first cycles would be the most critical for cultural resources, and after fifteen years, the destructive factors acting on the resource may tend to stabilize as vegetative cover increases and soil erosion decreases. However, the damage incurred during the intervening period cannot be accurately assessed. Whatever damage does occur is irreplaceable and final to this fragile, nonrenewable resource.

SOCIO-ECONOMIC CONDITIONS

For this section the style of presenting information in "general" and "specific" sections was not adhered to because it is impractical to address the subject on an allotment-specific basis.

Population

The proposed action would have no discernible influence on population levels within Custer County, the Challis Unit, or the city of Challis. The difference between the average livestock grazing use from 1970-75 and that in the proposed action does not appear to be of sufficient magnitude to generate population change. If livestock grazing use increases from the 17,426 AUM six-year average licensed use to 19,889 AUMs in the proposed action, the increased use would be accommodated with the existing work force. It is possible some individual operators would experience some decrease in the existing work force. However, these changes would have little, if any, effect on the trends toward consolidation of farm and ranch units and general decrease in number of individual livestock operations.

Employment

The proposed action would generate some relatively minor long-term impacts on employment, and significant short-term impacts during the three-year period the major improvements would be made.

Three areas of impact are expected. These include (1) the labor required annually by ranchers to maintain fences, springs, and other livestock facilities; (2) probable generation of one new job in the government sector (a "range supervisor" to monitor the new grazing systems); and (3) short-term impacts on the construction sector during installation of proposed improvements.

With only 50 employees in the construction sector in 1970 (TABLE 2-40), the generation of about $82,852 in income in this sector would place an unusual demand on the limited supply of local construction employees during the summer when most work would be done. An estimated 10-20 employees would be required during the same season that farm, ranch, and recreation employment is greatest.

Income

The proposed action would have an effect on both industry and personal income in the Challis Unit. Income effects as a direct result of the proposed action appear limited to livestock production, hunting, and construction of improvements.

A number of changes in resource use have been projected which would occur with or without the proposed action and, therefore, any income effects would not be attributable to the proposed action. General trends indicate a continuing increase in both industry and personal income. Total personal income in Custer County increased about 40% from 1965 to 1972 (Bollinger, 1975). Net farm income during this period

increased about 113%. To maintain perspective of impacts resulting from this action, 1970 is used as a base year.

The proposed action would provide a total of 19,889 AUMs active grazing use after a three-year implementation period, which represents the total increase in the level of grazing use. There has been a trend toward a gradual decrease in grazing use in the Challis Unit as illustrated in FIGURE 2-60. Vegetative studies similarly indicate a decreasing trend in available forage. Assuming that the decreasing trend would continue for various reasons for another four years under a continuation of the present program before sufficient improvements are implemented to reverse the trend, the estimated AUMs of active use in 1979 would be about 15,804. Therefore, the proposed action would represent an increase of 2,463 AUMs over the six-year average, and an increase of 4,085 AUMs more than the projected 1979 yield under present programs, funding, and environmental conditions (refer to FIGURE 3-6).

Based on the data in Chapter 2, the proposed action represents an increase in income of about $10,494 (2,463 AUMs x $2.85 x 1.495 = $10,494.23) over the six-year average use. The estimated increase in 1979 annual income would be $17,405 if the proposed action is compared to the 15,804 AUM level projected from historical trends (4,085 x $2.85 x 1.495 = $17,405.16). Cumulatively, the net gain for a fifteen-year period is estimated to be 62,797 AUMs if the proposed action is implemented, in comparison with the future environment conditions. This total income effect for a fifteen-year period is estimated to be $267,060, or an average of about $17,804 annually (62,279 x $2.85 x 1.495 = $267,059.54).

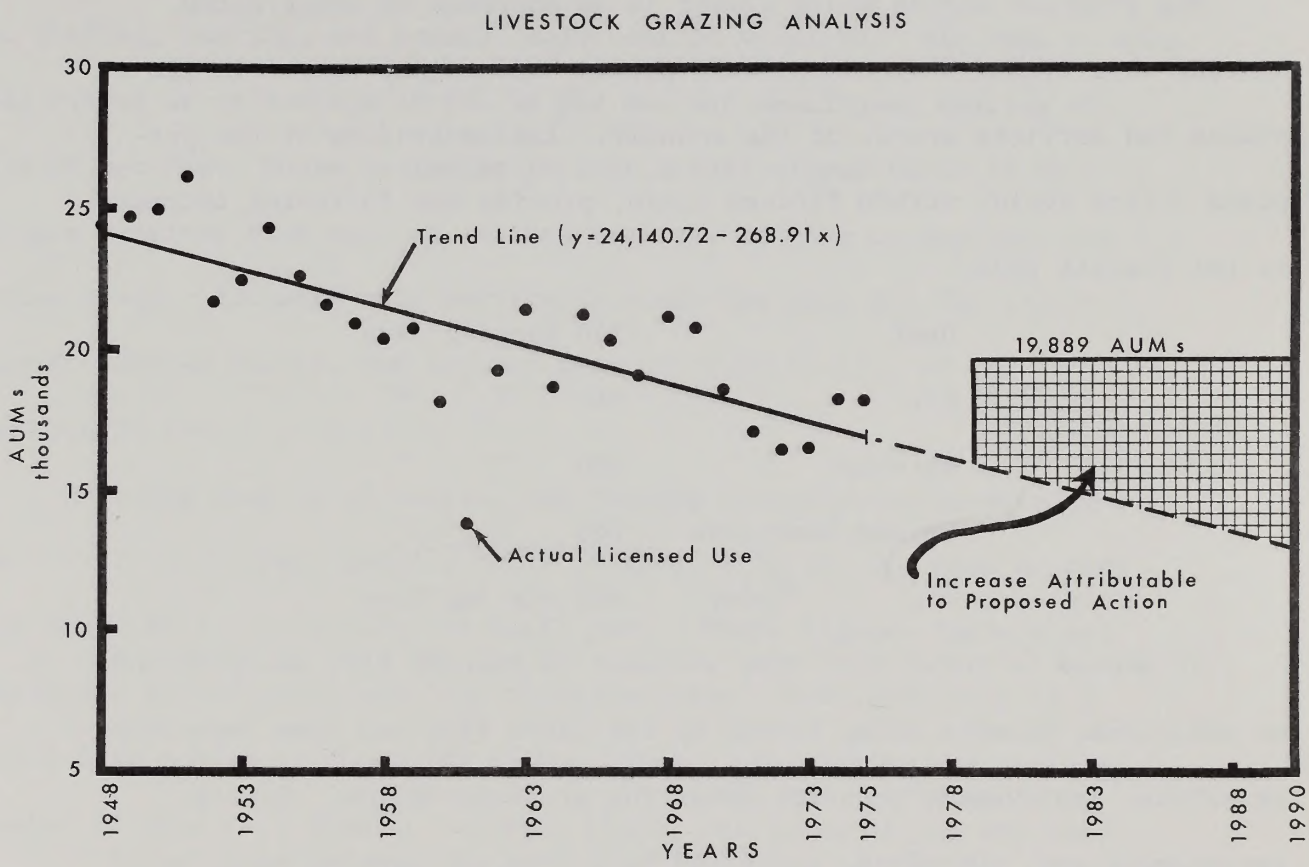


FIGURE 3-6 COMPARISON OF TRENDS AND PROPOSED GRAZING USE

The number of operators and years involved reduces the significance of the projected impact somewhat, whether viewed annually or cumulatively. However, the impact of these income effects would be positive and would strengthen the local economy.

The proposed action would result in an increase of about 2,100 hunting days (TABLE 3-9) which would provide additional income in the trades and services sector of the economy. Implementation of the proposed action would, within fifteen years, provide the following increase in the Challis Unit:

Deer	360 hunting days
Elk	880 " "
Antelope	600 " "
Upland Gamebirds	260 " "
Total	2,100 hunting days

It should be noted that this increase in hunting days would depend on additional permits being issued by the Idaho Fish and Game Department as habitat improvement occurred under the proposed action. Habitat improvement and, therefore, increased herd size and hunting days, would gradually increase if the proposed action is implemented. Annual increases in hunting days, on the average, are estimated:

Deer	24 hunting days
Elk	59 " "
Antelope	40 " "
Upland Gamebirds	17 " "
Total Annual Increase	140 hunting days

Detailed studies on the value of hunting have not been made for the Challis area, nor for Idaho. The Idaho Department of Fish and Game has been using values developed in a detailed recreation survey of the Southeastern United States (Georgia State University, March 1975). That study was made to determine, in monetary terms, the value to the public of fishing, hunting, and general enjoyment of wildlife. Big game hunting was valued at an average of $60.86 per day and small game hunting at $39.14 per day. These estimates include actual expenditures as well as values received from hunting, values required to give up hunting, and other costs. Although this particular study was done for the Southeastern United States, the figures give an approximation of the value of hunting in Idaho.

Detailed studies of hunting and fishing expenditures in Wyoming show resident hunters spend a total of about $700 for big game hunting and about $325 for fishing and small game. These figures include all services, retail purchases, and transportation. Transportation is a major item making up about 36% of the total. Considering the average number of days each Wyoming resident hunts, the value of big and small game hunting are very similar to the values given in the study of the Southeastern United States.

Federal agencies implementing the Water Resources Council's "Principles and Standards for Planning" (WRC, 1973) have generally used a value of $6 to $9 per hunter day. Individual agencies are responsible for developing procedures and guidelines to estimate monetary values of hunting and fishing, but few have actually done so to date and have used the Water Resources Council's suggested values. There is a general

consensus that $9 per hunter day is not a reasonable estimate of the total or "true value" of hunting and is too low.

The Oregon Wildlife Commission has been using an estimate of $30 per hunter day for mule deer in eastern Oregon, and $50 per hunter day for elk.

Considering the relatively wide range of values for hunter days and lack of studies for the Challis area, an estimate must be used. The estimate should include average expenditures in the Challis area and not necessarily the "complete" value of the hunter day in order to be consistent with other economic data used in this statement. A value of $20 per hunter day for big game and $8 per hunter day for small game will be used.

The proposed action would generate an additional 123 big game hunting days which would contribute about $2,460 annually and an additional 17 small game hunting days which would contribute about $136 annually. Combined hunter days would add about $2,596 to the Challis economy annually. The proposed action would be expected to generate about $311,520 in 1970 dollars through an increase in hunter days for a fifteen-year period.

Additional income (about $10,400 to $14,300 per year) would be generated by adding a BLM "range supervisor" position in Challis. A total of about $107,000 in total income would result from the construction of improvements over a three-year period (TABLE 3-13).

TABLE 3-13

ESTIMATED COSTS OF PROPOSED IMPROVEMENTS BY YEAR OF EXPECTED COMPLETION

Type of Development	Cost per Unit (Installed)	Year 1 (1976) Units	Year 1 (1976) Cost	Year 2 (1977) Units	Year 2 (1977) Cost	Year 3 (1980) Units	Year 3 (1980) Cost	Total-All Years Units	Total-All Years Cost
Spring Development	$1200/spring	31	$ 37,200	22	$ 26,400	-	-	53	$ 63,000
Spring Improvements	$1200/spring	9	10,800	6	7,200	-	-	15	18,000
Catchments	$10,000/catchment	7	70,000	1	10,000	-	-	8	80,000
Pipeline	$3000/mi.	31	93,000	8	24,000	-	-	39	117,000
Storage Tanks	$4000/tank	5	20,000	3	12,000	-	-	8	32,000
Watering Troughs	$200/trough	9	1,800	-	-	-	-	9	1,800
Fencing	$1800/mi.	73	140,400	8	14,400	-	-	86	154,800
Cattleguards	$1000/guard	1	1,000	-	-	-	-	1	1,000
Sagebrush Burning	$4/acre	600 ac	2,400	-	-	-	-	600 ac	7,400
Sagebrush Chaining	$10/acre	-	-	600 ac	6,000	1000 ac	$ 8,000	600 ac	6,000
Sagebrush Spraying	$8/acre	-	-	-	-	-		1000 ac	8,000
Total			$376,600		$100,000		$ 8,000		$484,600
Income Affect	Est. 22% Gross Contract: Value 1/		$ 82,852		$ 22,000		$ 1,760		$106,612

1/ National Park Study.

Public Finance and Tax Base

The proposed action would provide an increase of 2,463 AUMs over the six-year average grazing use. This represents an increase in the tax base. The 2,463 AUMs represent about 205 animal units (2,463) ÷ 12 = 205.25) which have an estimated capitalized value of $1,000 each or a total value of about $205,100.

If rural property is assessed at 14% of its market value and the total mill levy is .07 or 7%, the proposed action would result in $2,009 in additional taxes annually. In comparison, if the declining trend in grazing use continued and the proposed action were not implemented, the taxes on ranch property would be expected to decline at a rate of about $220 annually (268.91 AUMs ÷ 12 = 22.41 animal units x $1,000 x .14 x .07 = $219.61).

The cumulative impact of the proposed action in a fifteen-year period would be an increase of about $22,099 in taxes accompanied by an initial decline, then an increase and stabilization of ranch property values.

Attitudes and Values

The history of actions and reactions leading up to the proposed action confirms the existence of conflicting goals and values. As a result, ranchers with permits to graze livestock on national resource lands (NRL), and their associates and friends are placed in what might be described as a defensive position.

Given the attitudes and values prevalent in the area, the proposed action imposes a higher degree of federal control over the private operators involved. While they may be pleased that the overall level of actual grazing use could be increased, all operators would probably be somewhat critical of the increased federal presence and operating constraints placed on them. This will reduce their latitude of individual decision-making and, to some extent, impose operational parameters originating from nonlocal entities.

Those operators receiving reductions in use may be more critical and vocal. Groups or interests that are concerned about the proper management of public resources should be pleased, to the extent that the proposed action is funded and implemented. On the other extreme, some interest groups that place high values on wildlife and fisheries may be disappointed that the proposed action is still multiple use management rather than single-use oriented.

With the exception of individual ranchers experiencing reductions, there are benefits for all interests including grazing increases and wildlife population stabilization. The very essence of the "economic problem" (collective demands for more resources and products than society and the environment can supply) is apparent here. Given the array of attitudes and values in the area or focused on the area by others, it is impossible to predict all reactions, yet the proposed action is responsive to those attitudes and values.

Summary

Livestock Industry

The increased amount of licensed grazing use over a fifteen-year period would be expected to generate about $267,000 in income to the Challis area, or an average of about $17,800 annually. To gain perspective of significance, a comparison can be made with the total income data described in Chapter 2. Custer County had a 1970 income of about $7 million so the $17,800 increase in income would appear insignificant. Similarly, the $17,800 would represent about 1.04% of the income effect of the livestock industry in Custer County which was estimated at $1,715,779.

The increase of $17,800 income effect does appear to be significant when comparing it to the $79,215 income which comes directly from livestock grazing on NRL in the Challis Unit. The increase of $17,800 would represent an increase of about 22.5% in income effect from NRL grazing. However, income from NRL grazing would still represent only about 2.7% of the total income in Challis with the increase.

Hunting

Additional income to the Challis economy through increased hunting days is estimated at $311,520 over a fifteen-year period or an average of about $20,768 annually. As with the livestock industry income, the increase would appear insignificant when compared with Custer County's 1970 income of $7 million. The present contribution hunting makes to the Challis economy has not been estimated so the significance of the increased hunter days is not clear. It is believed that hunting would

represent 2% or more of income for Challis, and with the increased income would probably not exceed 2.5 to 3%.

Employment

Addition of one federal employee in Challis would be expected to generate about $10,700 in income effect. When compared to total income for Challis, this amount is not significant.

Construction

Construction of the improvements needed to implement the proposed action would contribute about $107,000 to the Challis economy in a three-year period, or about $35,667. This amount represents only 1% of the Challis income and would occur only three years. For that reason, the impact is not considered significant. However, if 15 to 20 local persons are involved in the construction of improvements, short-term adverse impacts would be expected in the contract construction sector which could be significant. In 1970, only 50 persons were employed in contract construction. This potential adverse impact has not been quantified.

Taxes

The increase of about $2,000 tax revenue annually compared to total tax revenues of about one-half million dollars for Custer County appears insignificant. However, the increase would be derived from a few individual taxpayers.

IMPACT SUMMARY

In TABLE 3-14 information about predicted results of the proposed action are summarized for resources or components. A semiquantitative appraisal was used to make evaluations for subjects for which more precise estimates could not be derived.

TABLE 3-14

PROJECTED RESULTS OF PROPOSED ACTIONS AFTER 15 YEARS
IN COMPARISON WITH THE PRESENT STATUS FOR THE CHALLIS UNIT

Resource or Component	Present Status	After 15 Yrs. with Proposed Action
Soil and Water Resources Sediment Production (Tons/Yr.)	226,463	203,817
Vegetation AUMs Produced	29,842	45,665
Annual Harvested Timber (MBF)	354	354
Animals - Terrestrial		
Acres Big Game Habitat		
Deer		
Winter range		
Poor	26,111	20,889
Fair	25,992	26,016
Good	1,885	7,083
Elk		
Winter range		
Poor	228	182
Fair	1,206	1,011
Good	543	784
Antelope		
Yearlong range		
Poor	22,105	16,579
Fair	25,323	24,518
Good	8,694	15,025
Summer range		
Poor	6,272	4,704
Fair	13,408	11,624
Good	6,932	10,284
Bighorn Sheep		
Winter range		
Poor	3,205	1,923
Fair	3,827	3,578
Good	107	1,638
Acres Small Game Habitat		
Sage Grouse		
Brooding/nesting habitat		
Poor	8,516	5,536
Fair	5,679	6,671
Good	0	1,988
Winter habitat		
Poor	0	0
Fair	913	593
Good	2,713	3,033
Endangered/Threatened Plants and Animals		
Wild Horses		
Animals - Aquatic		
Stream Miles (Anadromous Fish)		
Poor	4.4	1.4
Fair	13.1	16.1
Good	15.5	15.5
Stream Miles (Resident Fish)		
Poor	22.2	21.0
Fair	24.5	17.2
Good	2.0	10.5
Recreation (Day Visitor Use)		
Fishing	10,000	10,000
Hunting	20,000	22,100
Visual Resources		N.C.
Cultural Resources	-- 2/	--
Agriculture		
AUMs Used by Livestock	17,426 3/	18,899
#Economics		
Livestock Industry	##	17,800/yr.
Hunting	##	20,768/yr.
Construction & Improvements	0	$107,000 Initial 3 yr. period
Federal Employment	##	$10,700/yr.
County Taxes Collected	##	$ 2,000/yr.

1/ If proposals of the wild horse plan are implemented the herd would be controlled by BLM to a size of 150-300 animals.

2/ For the semi-quantitative assessment --- <-- <N.C. <+ <++ <+++ (Two "+'s" don't indicate twice as much impact as one "+", only that "++" is greater than "+")
N.C. - No change, - = Adverse, + = Beneficial.

3/ 6 year average active use.

Estimates for economics are for the period 15 years after implementation.

Present status unknown.

CHAPTER 4

MITIGATION

If proposed actions are implemented, mitigating measures in this chapter would be committed by BLM. The measures are addressed by subject and are in a numerical sequence. Following the listing a tabular summary (TABLES 4-1 through 4-8) is provided for resources or components. In the tables impacts are summarized, mitigating measures are referred to by number, and an estimate is provided for degree of reduction of impacts.

AGRICULTURE

Farming

Adverse impacts of later turnout dates for livestock on irrigation and hay production have not been quantified, but these impacts seemingly are of relatively minor significance. There are no practical measures BLM could take to mitigate this impact and therefore measures would not be committed.

Livestock Grazing

The proposed action would result in decreased levels of grazing use in six allotments involving twenty operators. Adverse impacts resulting from a decrease in grazing use are quite variable, i.e., they not only are determined by the relative amount of the decrease in grazing use on NRL, but on individual situations which include the degree of dependence

on NRL, availability of other grazing land, and the financial status of individuals.

Livestock operators would be required to maintain improvements constructed to implement the AMPs consistent with BLM policy. Additional labor may also be required for some operators to move livestock from one pasture to another. As with farming, BLM would not commit to mitigative measures for impacts to individual operators.

ADMINISTRATIVE

1. Livestock grazing use would be reduced from that proposed in the Warm Springs Allotment as follows:

Spring Period

1000 cattle	05/01-05/15 -	500 AUMs
733 cattle	05/16-05/30 -	367 AUMs
75 cattle	06/16-06/30 -	38 AUMs
150 cattle	07/01-07/15 -	75 AUMs
	Total	980 AUMs

2. Fall livestock grazing use would be increased in the Warm Springs Allotment as follows:

450 cattle 10/01-10/15 - 225 AUMs

(The reduction per year would be -980 AUMs in spring and +225 AUMs in the fall equalling a net reduction of 755 AUMs.)

3. The most important wet meadows in the unit would be fenced to prevent livestock grazing in the critical spring period except those along major stream bottoms. About 50 acres would be fenced to permit development of high quality nesting, brooding, and feeding areas for upland game birds and other wildlife. Each exclosure would be from one to five acres in size. These fenced areas might be grazed periodically (after August 1) to prevent development of unduly rank vegetation.

4. The crucial bighorn sheep winter range in the proposed South Garden Creek Allotment, including about 870 acres in the lower portions of the Wood Creek Pasture, would be fenced to exclude all livestock grazing. In addition, crucial bighorn sheep winter ranges in the Marco Creek Pasture of the proposed East Fork Allotment (including about 90% of their most important winter range), and the steep rocky hillside south of Cherry Gulch in the Ziegler Basin portions of Pasture No. 2 of the proposed Road Creek Allotment, would also be fenced to exclude livestock use. This area includes about 1,932 acres. Both areas have been utilized by livestock in past years, causing reduction of forage available to bighorns in winter. If livestock are found to travel from Marco Creek into the head of Ziegler Basin, a fence would be constructed to prevent this use.

5. All domestic horse use (33 horses) in the proposed North Garden Creek Allotment would be converted to cattle AUMs to reduce utilization of forage needed in winter by deer.

GENERAL IMPROVEMENTS

6. For each proposed improvement, visual contrast ratings would be considered, and design changes would be made as necessary to meet visual resource management (VRM) class objectives.

7. Nineteen cultural resource sites eligible for the National Register would be fenced to prevent disturbance by livestock and curtail accelerated erosion.

8. "Determination of Effect on Antiquities" (106/2 (b)) Statements would be prepared to determine the effect of all proposed projects on cultural resources, and provide the Advisory Council on Historic Preservation opportunity to comment.

FENCE AND CATTLEGUARD

9. All fences would be constructed in accordance with BLM Manual 1737. No fence would exceed 42 inches in height to permit deer and antelope passage. All fences constructed on or adjacent to the East Fork and South Garden Creek bighorn winter ranges or near routes followed by bighorns during their seasonal migrations would be constructed to permit bighorn sheep passage.

10. For fences built in previously undisturbed areas, construction materials would be hauled and distributed in a manner to cause the least surface disturbance.

11. During construction of fences, pipelines, or other water developments or equipment roads, no scraping or blading of rights-of-way would be allowed.

12. Fences built to divide pastures or form exterior boundaries would not be located at right angles to important recreation roads or viewpoints. In all cases, long, straight fenceline tangents would be avoided. Fences would not be skylined, except in wild horse areas, where they would be viewed from important recreation roads or viewpoints.

13. Fences built to exclude livestock from spring sites and water catchments would be designed to avoid blocks of visually contrasting native vegetation.

14. All fences, except those on the wild horse boundary, would be designed to permit free horse movement. This could be accomplished by running fences into areas that are natural barriers to livestock but can be traversed by wild horses.

15. Gray posts which blend into the environment would not be used in a wild horse area to prevent damage and injury to horses.

16. Wooden posts would be used more liberally; every other post would be a wooden post where terrain permits and every fifth post would be wood in steep, rocky terrain.

17. Fences would be kept to ridgetops as much as possible in wild horse areas.

18. Fences would parallel horse movement patterns as much as possible.

19. Barbless wire would be used in the construction of fences in the wild horse area.

20. All gates would be left open after livestock had been removed in wild horse areas.

21. The proposed Anderson Peak Fence (Project Fence #6) in the proposed San Felipe Allotment would be left open-ended near the top of Anderson Peak to facilitate the free movement of wild, free-roaming horses.

22. The Corral Basin Fence (Project Fence #15) in the proposed Warm Springs Allotment would have a minimum of two double gates to facilitate horse movement and to prevent the fence from trapping horses in the winter. These gates would be opened prior to November 30 of each year.

23. Cattleguards would be installed where fences now cross existing roads used heavily by recreationists.

24. No cattleguards would be placed in the wild horse area where there is a significant population of horses and/or where significant wild horse movement occurs.

25. All cattleguards in the wild horse area would be flagged or marked to discourage horses from jumping over.

26. Fences built in areas used by snowmobilers would have let-down panels.

WATER DEVELOPMENTS

27. Water improvements would include facilities and treatment for public water consumption where needed.

28. Two water troughs located on the surface of two cultural resource sites eligible for the National Register would be relocated adjacent to the site and the site would be fenced.

29. An attempt would be made to construct proposed livestock watering troughs at least one-half mile from browse stands known to be important to wintering big game herds.

30. In the 40 proposed spring developments, water would be retained at the original source in sufficient supply to serve normal wildlife populations traditionally using the sites for watering. Sufficient water would be retained to maintain wet meadows at larger spring sources. Meadows would be fenced as deemed necessary to preserve important wildlife habitat.

31. The assistance of a soil scientist would be obtained in picking the final location for all water development placed in soil association D, steep terrain, and along vertical-walled drainages. This would minimize sediment production from highly erodible areas due to the concentration of domestic animals.

32. Water catchments would be screened from recreation roads and viewpoints by planting vegetation.

33. Pipelines would be located to take advantage of screening topography and vegetation. The narrowest possible vegetation and land surface strip would be disturbed in pipelaying.

34. Storage tanks and troughs would be painted to blend with surrounding natural earth and vegetation colors. Paint colors would correspond to natural colors most evident during the peak recreation season. These structures would not be skylined in view of recreation roads or viewpoints.

VEGETATIVE MANIPULATION

35. In the proposed chaining area, revegetation would be done with species that most closely match adjacent natural vegetation. This would enhance chances for vegetation to become established because of adaptability and to visually blend with the surroundings.

36. A 500-foot-wide buffer strip would be left untreated on either side of all drainages containing "live" water in or adjacent to vegetative manipulation projects. This would minimize the amounts of sediments and other pollutants entering stream systems.

37. Spray materials would be applied by helicopter in winds of less than seven miles per hour to allow for a more exact placement of spray material. This would aid in reducing the chance of chemicals entering streams.

38. The spray formulation or time of application for the proposed 1,000-acre spray project in the proposed Bald Mountain Allotment would be selected to kill not more than approximately 75% of the sagebrush. A 200-foot-wide, irregular strip of unsprayed sagebrush would be left along the bottom of all major waterless draws traversing the proposed project area.

39. The 600-acre burn proposed in the proposed East Fork Allotment would not be conducted until after September 1 to reduce mortality of small or young wildlife living in the area.

40. Chaining would be conducted as near to contour as possible so brush piles and chain marks would help interrupt overland flow concentrations.

41. A minimum of four ten-acre patches of sagebrush would be left unchained in the proposed 600-acre chaining in the proposed Road Creek Allotment to maintain adequate sage grouse nesting and foraging habitat and cover within the treatment area. Either ladak or nomad alfalfa would be included in the seed mixture at a rate of one pound per acre to improve forage for deer, antelope, and grouse, and chaining.

ROADS AND TRAILS

42. Vehicle tracks made during construction of projects would be water barred at intervals necessary to minimize the concentration of overland flows.

43. Roads or trails would be constructed on grades not to exceed 15% except for short pitches. These roads or trails would be water barred at intervals to minimize overland flow. Disturbed areas would be reseeded with native grasses to aid in stabilizing the soil surface.

44. Roads used for livestock trucking or trailing would be posted to alert the traveling public to such use.

45. To protect visual resources from unnecessary scarring, no service roads or trails associated with the proposed improvements would be constructed without concurrence of the District Manager on the need, location, and design standards. Service roads and trails would be located to fit the topography, and advantage would be taken of opportunities to screen with natural vegetation.

TABLE 4-1

SOIL AND WATER RESOURCES

Impact	Mitigating Measure(s)	Reduction Due to Mitigation
1. The East Fork burning project could add increased nutrients to Corral Creek, Jimmy Creek and Jimmy Smith Lake.	36	Providing a 500 foot buffer strip of untreated area on either side of all drainages would result in mitigating an estimated 60-90% of the impact.
2. Contamination of surface water could result from the Centennial Flat spraying project.	36, 37	The buffer strips, use of helicopter, and application during winds of less than 7 mph would mitigate an estimated 90-100% of this impact.
3. The Road Creek Allotment chaining project could add increased sediments to Chicken Creek.	36, 40	The buffer strip and chaining on the contour would eliminate an estimated 70-90% of this impact.
4. The stock trail in Spud Creek Allotment could add sediments and increased animal wastes to the Salmon River.	43	The grade restrictions, water bars and reseeding of the disturbed areas would eliminate an estimated 40-60% of this impact.
5. Increased erosion from wind or water could occur from rights-of-ways scraped or bladed to mineral soil.	11	By allowing no scraping or blading of rights-of-ways on fences or pipelines this impact would be eliminated.
6. Water developments placed in soil association D or adjacent to vertical banked drainages could increase overland flow and increased sediment production because of concentrated animal use.	31	By having a soil scientist assist in selecting the final location of the water facilities highly erosive areas would be avoided and should mitigate this impact by an estimated 75-95%.
7. Accelerated erosion could occur within vehicle tracts during the construction of improvements.	42	By water barring at regular intervals all tracts which are of sufficient depth to concentrate overland flow, an estimated 80-90% of this impact could be eliminated.

TABLE 4-2

VEGETATION

Impacts	Mitigating Measure(s)	Reduction Due to Mitigation
1. The proposed AMP for the Warm Springs Unit would result in short term adverse impacts to vegetation during Treatment A. These impacts would affect carbohydrate reserve storage and plant vigor, amount of seed produced, seedlings established, litter accumulation, and soil conditions necessary for plant growth.	1	Reducing grazing use during the spring growing period (Treatment A) would reduce the severity of the impacts 68% in Area II, and 17% in Area I. It would result in a 22% increase in severity of the impact in Area III.
2. The proposed AMP for the Warm Springs Unit would result in short term adverse impacts to vegetation during Treatment B in the Spring Basin, Broken Wagon and Corral Basin pastures. These impacts would affect seed production, litter accumulation and soil compaction.	2	Adjusting grazing use during the Treatment B period would not change the severity of the impact in the Spring Basin and Broken Wagon pastures. It would decrease the severity of the impact 67% in the Corral Basin pasture.
3. The proposed AMP for the Warm Springs Unit would result in overall pasture short term impacts to vegetation in the Sheep Creek pasture Area II and the Spring Basin, Broken Wagon and Corral Basin pastures in Area III. Adverse impacts would result to seedling establishment and soil compaction in the Sheep Creek pasture Area II and Corral Basin pasture Area III. Adverse impacts would result to carbohydrate storage, seed production, litter accumulation and soil compaction in the Spring Basin and Broken Wagon pastures of Area III.	1, 2	Reducing grazing use during spring growing season and later would fully mitigate adverse impacts in the Sheep Creek pasture in Area II. It would result in a 12% increase in severity of the impact in the Spring Basin pasture and result in no change in the Broken Wagon and Corral Basin pastures of Area III.

TABLE 4-3

ENDANGERED OR THREATENED PLANTS

Impact	Mitigating Measure(s)	Reduction Due to Mitigation
1. A remote chance exists that ET plant species could be eliminated through livestock use simply because of the lack of information regarding these species.	1, 2, 3 /1	100% 100%

/1 Refer to the three categories for the monitoring program for Endangered, Threatened (ET) Plants on Page 21. The three measures are not listed in the preceding section.

TABLE 4-4

TERRESTRIAL WILDLIFE

Impacts	Mitigating Measure(s)	Reduction Due to Mitigation
1. Reduction of important sage and blue grouse brooding habitat and other upland bird habitat on approximately 100-200 acres of wet meadows scattered through several allotments, as the result of excessive livestock grazing.	3	Fencing of selected key wet meadows would improve about 50 acres of vital upland game bird habitat for brooding and feeding.
2. Gradual deterioration of 2,378 acres of crucial bighorn sheep winter range by proposed livestock grazing in the Birch Creek and Wood Creek Pastures of the Garden Creek Allotment.	4	Fencing the livestock out of the key bighorn sheep winter range on the Wood Creek-Birch Creek Pastures would reduce the competition impact on bighorns by about 80%.
3. Domestic horses grazing Garden Creek Allotment utilize considerable forage needed by deer in winter.	5	Changing horse AUMs to cattle AUMs would reduce the competition on the Garden Creek Allotment by about 25%.
4. About 75 miles of proposed fencing would restrict antelope seasonal and daily movements and produce occasional mortality.	9	Mitigating measure would permit antelope passage of all 75 miles of proposed fences, and mitigate all impacts by about 85%.
5. Construction of livestock watering troughs in the vicinity of key browse ranges encourages cattle to utilize shrubs in late summer and fall.	29	Mitigating measure would reduce adverse use of big game winter ranges by about 10%.
6. Development of 54 springs for livestock could greatly reduce quality of grouse brooding areas and succulent forage needed by many small animals and birds if water were not retained at the original sources.	30	Mitigating measure would reduce impact on wildlife by about 80%.

TABLE 4-4 (Con't.)

7. The 1,000-acre proposed spray project in the Bald Mountain Allotment would remove about 1,000 acres of sagebrush used by deer in winter and a variety of species of wildlife in summer. This could create malnutrition of some animals that depend on this forage in winter.	38	The mitigation measures would reduce the short-term effects of the impact by about 50%. Overall long-term effects on grouse should be beneficial.
8. The 600-acre proposed burn in the East Fork Allotment would kill a small number of small mammals and reptiles.	39	The mitigating measure would reduce the kill of small animals and birds by about 70%.
9. The proposed 600-acre chaining project in the Road Creek Allotment would eliminate sagebrush needed by sage grouse in summer and a few deer in winter.	41	The mitigating measure would reduce the impact on both grouse and deer by about 80%.
10. Spring livestock use on bighorn sheep winter ranges in the East Fork Allotment every second or third year (depending on pasture) could seriously reduce forage for bighorns available the following winter and could cause some malnutrition or death of sheep during severe winters.	4	Mitigating measure to exclude livestock from critical bighorn winter range in the East Fork Allotment would reduce the impacts on bighorns by about 90%.

TABLE 4-5

WILD HORSES

Impact	Mitigating Measure(s)	Reduction Due to Mitigation
1. Fences possibly injuring the horses, restricting movement, or trapping horses during winter.	14 through 22	Moderate 2/
2. Cattleguards injuring the horses.	24, 25	High 3/
3. Anderson Peak Fence restricting wild horse movement.	21	Moderate
4. Corral Basin Fence restricting wild horse movement and trapping horses during winter.	22	Moderate

1/ Low — Mitigation would only provide a small or slightly detectable improvement over that which is proposed. Less than 40% effective in reducing the impact.

2/ Moderate — Mitigation would provide an obvious beneficial improvement but would not entirely mitigate. More than 40% and less than 70% effective in reducing the impact.

3/ High — Mitigation would provide nearly complete or complete improvement. More than 70% effective in reducing the impact.

TABLE 4-6

AQUATIC WILDLIFE

Impacts	Mitigating Measure(s)	Reduction Due to Mitigation
1. Increased sedimentation of streambeds due to construction of fences and water development projects.	11,31,42	Estimated 80%
2. Short-term impact on aquatic life in Centennial Creek, Rattlesnake Creek, and Salmon River from chemicals entering streams and loss of streambank vegetation during 1000-acre proposed sagebrush spray project in Bald Mountain Allotment.	36,37,38	Approximately 100%
3. The proposed 600-acre burn in the East Fork Allotment would result in loss of streamside vegetation along Corral and Jimmy Creeks, add nutrients to these small streams and Jimmy Smith Lake, and increase sedimentation of these three waters.	36	Estimated 75%
4. Increased sedimentation of Chicken Creek, Road Creek and other downstream waters due to the proposed chaining and seeding project in the Road Creek Allotment.	36,40	Estimated 90%
5. Construction and use of the livestock trail in the Spud Creek Allotment would result in a small loss of streambank vegetation, and increased sedimentation and animal wastes would enter the Salmon River.	36,43	Estimated 50%

TABLE 4-7

VISUAL AND RECREATION RESOURCES

Impacts	Mitigating Measure(s)	Reduction Due to Mitigation
1. Proposed improvements would disturb basic landscape elements.	6,10	Low
2. Service roads or trails associated with proposed improvements may scar the landscape.	45	Low
3. Fences dividing pastures or forming exterior boundaries are the focal point for contract between grazing pastures.	11,12	Low
4. Fenced exclosures built to exclude livestock from springs or water catchments create visual disturbance.	13	Low
5. The combination of water catchments and fenced exclosures may exceed visual resource objectives.	13,32	Low
6. Pipelines may cause unnatural lines in the landscape.	33	Low
7. Water troughs and storage tanks add unnatural structures to the landscape.	34	Low
8. Vegetative treatments by burning cannot meet visual quality class objectives.	35	Moderate
9. Fences can be a barrier to cross country recreation use.	23,26	Low
10. Livestock trucking and trailing may be hazardous to recreation travelers.	44	Low

TABLE 4-7 (Cont.)

VISUAL AND RECREATION RESOURCES

Description of the Key Rating Factors
for Visual and Recreation Resources

Visual Resources

Low	Actions that would meet the objectives of the Visual Resource Management Classes II, III and IV.
Moderate	Actions that would not meet the objectives of Visual Resource Management Class II.
High	Actions that would not meet the objectives of Visual Resource Management Classes II, III or IV.

Recreation Resources

Low	Actions that would not result in the reduction of recreation visitor use.
Moderate	Actions that would directly result in the reduction of a recreation experience in terms of quality.
High	Actions that would directly result in the reduction of recreation use in terms of quality and quantity.

TABLE 4-8

CULTURAL RESOURCES

Impacts	Mitigating Measure(s)	Reduction Due to Mitigation
1. Proposed grazing system would result in increased trampling by livestock and accelerated erosion of some cultural resources.	7	Approximately 100%
2. Two cultural resource sites have water troughs on their surface.	28	Approximately 100%
3. Proposed grazing improvements would result in disturbance or destruction of some cultural resources.	7,8	Approximately 90%, assuming 106/2(b) Statement recommendations are followed.

MONITORING PROGRAMS

Resource monitoring would be necessary to document changes occurring as a result of implementing the proposed actions. Monitoring programs would include the studies in the proposed allotment management plans (AMPs), plus other specific studies, including wild horse, water quality, cultural resource, wildlife, and watershed studies.

Wild Horses

Wild horse monitoring would include:

1. Distribution of horses in each pasture to determine how horses react to the various treatments.

2. Utilization checks in rested pastures to determine how much impact the horses have on those pastures.

3. Population structures and dynamics to determine changes, if any, recurring in herd population structure and dynamics.

4. Behavioral changes as a result of livestock management systems.

5. Intensity of horse use and the condition and health of horses using winter ranges.

6. The effect of all existing and proposed fences on horses. Provisions for change in the fences would be made when or if problems arose.

Endangered or Threatened (ET) Plants

A system of monitoring, either independently or in conjunction with other continuing range studies, would be initiated to determine trends

in populations of ET plant species. Treatment A in particular would be studied and its effects on ET plant species analyzed.

1. A botanical survey of the unit would be undertaken at the earliest date to determine which ET plants are actually present, where they are located, and to what extent they are impacted by livestock use.

2. A system of monitoring, perhaps in conjunction with other continuing studies, would be undertaken to determine trends for ET species. Treatment A in particular would be studied and its impacts on ET species carefully analyzed.

3. Should it be determined that certain of ET species warrant protection, limited areas would be set aside by fencing or some other form of livestock exclusion to insure their survival.

Cultural Resources

All National Register eligible resources in the unit would be monitored on a regular basis. Each resource site would be inspected at least semi-annually, and the inspections documented.

The monitoring program would provide data on the effectiveness of mitigating measures and other impacts which may develop. If, as a result of monitoring, the BLM becomes aware of adverse impacts occurring to specific cultural resources, the following appropriate mitigating measures, among others, would be undertaken: adjustments in livestock grazing management; site-specific cultural resource protection measures; salvage of cultural resources. Specific mitigating measures would be determined by the significance of the cultural resource and degree of impact.

One hundred seventeen known cultural resource sites ineligible for the National Register are being damaged to some degree by the effects of livestock trampling and grazing improvement projects. BLM policy provides mitigation for all cultural resources being adversely impacted. To accomplish this objective, the BLM would develop a cultural resource management activity plan over the next three years. This plan would provide detailed data on non-National Register cultural resources and the degree of adverse impacts occurring. Once this plan is completed, the following mitigating measures, among others, would be undertaken where appropriate: adjustments in livestock management; site-specific cultural resource protection measures; salvage of cultural resources. Specific mitigating measures would be determined by the significance of the cultural resource and the degree of impact.

An estimated 750 cultural resource sites in the Challis Unit have yet to be identified. Some are probably being disturbed to some degree by the effects of livestock grazing and related projects. As a part of the cultural resource monitoring program, the BLM would inventory areas which have not been surveyed for cultural resources.

If cultural resources are found, they would be evaluated and impacts, if any, would be assessed. If adverse impacts are occurring to specific cultural resources, the following mitigating measures, among others, would be undertaken where appropriate: adjustments in livestock grazing management; site-specific cultural resource protection measures; salvage of cultural resources. Specific mitigating measures would be determined by the significance of the cultural resource and the degree of impact.

Aquatic Life and Water Quality

The importance of fisheries and fish habitat within the Challis Unit was recognized during preparation of AMPs. Overall objectives for improving fish habitat, streamside vegetation and/or streambank stability were included in eleven AMPs. Trend studies to assure that these objectives would be achieved would be conducted in six of the proposed AMPs.

Combined water quality and fish habitat monitoring studies would be undertaken to document changes due to implementing the proposed grazing systems and to provide a basis for changing management of livestock if objectives for water quality and fish habitat are not met. Monitoring would be conducted jointly with the U. S. Geological Survey in the Road Creek Watershed, using previous sampling stations in conjunction with several supplemental stations.

Standard water chemistry tests and physical measurements would be collected at predetermined time intervals to obtain valid conclusions from the data. Important physical parameters measured would include stream discharge, water temperature, turbidity and suspended sediments, which would provide estimates of sediment discharge. Bacteriological sampling would be monitored at weekly intervals during livestock treatments. Analysis would proceed concurrently with sampling.

After studies are completed, appropriate adjustments in the management of livestock grazing use would be made to mitigate adverse impacts.

Wildlife

Wildlife studies would be established on crucial big game ranges to monitor habitat condition and trend, and to ascertain which grazing

animals are primarily responsible for any habitat deterioration that occurs. Studies would also be performed to better delineate the actual use areas of each big game species in winter, and any fawning, calving, or lambing areas. An effort would be made to delineate sage grouse strutting, nesting, and wintering areas.

CHAPTER 5

UNAVOIDABLE ADVERSE IMPACTS

This chapter discusses adverse impacts of the proposed action which were analyzed in Chapter 3 and were unmitigated or only partially mitigated in Chapter 4.

SOIL AND WATER RESOURCES

Unavoidable adverse impacts to the soil and water resource would consist primarily of 203,817 tons of sediment production from soil erosion and overland flow caused by the grazing system, vegetation manipulation and water treatment construction improvements.

Most sediment production would occur as a result of Treatment A particularly on Soil Association D and on steeper slopes in allotments of Warm Springs, San Felipe/Peck Canyon, Road Creek, Red Lake, Squaw Creek, Jeff's Creek pasture of North Garden Creek, Penal Gulch in Round Valley, Sullivan Creek and Split Hoof. Soil Association D comprises in excess of 50 percent of the area in the last two allotments. The total acreage of the D Soil Association is approximately 94,000 acres or 26 percent of the total unit acreage. Sedimentation is predicted to decline after the third grazing cycle (approximately nine years). Additionally the grazing system would cause unavoidable lowering of water quality by increasing biochemical oxygen demand (BOD) and bacterial counts associated with the increased numbers of animals along streams and valley bottoms. This impact would occur primarily during

Treatment B mainly on Soil Association A areas which comprise approximately 50,000 acres in the unit, and, would continue until sufficient forage on the upland areas become available to lure animals away. The additional forage is estimated to become available after the first three cycles (six to nine years) of the grazing system.

For the vegetative manipulations 10-30 percent of the adverse sediment impact would not be mitigated for the Road Creek chaining project and the sediment would lower the water quality of Chicken Creek; the construction of the livestock trail in the Spud Creek allotment would be 50 percent mitigated. Both of these impacts should also be of short term or not exceed the first three cycles of the grazing system.

Unavoidable adverse impacts on vegetation resulting from the grazing system would occur primarily during the early spring grazing (323,274 acres) because of the following decrease in: (1) synthesis and storage of carbohydrates, (2) seed production, (3) seed shattering and trampling, (4) the rate of establishment of new seedlings, and (5) litter accumulation.

This impact would occur on all allotments except Thompson Creek Allotment (entire allotment); North Garden Creek Allotment-Klug Gulch Pasture; East Fork Allotment - Marco Pasture; Herd Creek Allotment - Pine Creek Pasture; and Bruno Creek Allotment (entire allotment). The duration of this impact is predicted to be of a short term nature lasting six to nine years.

Additionally, short term adverse impacts would occur during Treatment B in the following pastures in the Warm Springs Allotment Area III: Spring Basin Pasture, Broken Wagon Pasture. These two pastures include approximately 23,450 acres. Residual impacts in the Corral Basin Pasture (14,209 acres) would be only 67 percent as severe after mitigation.

Overall short term impacts to vegetation would occur in the Broken Wagon and Corral Basin Pastures of the Warm Springs Allotment Area III. These pastures include approximately 25,800 acres.

Residual unavoidable adverse impacts after mitigation would be increased 12 percent in severity in the Spring Basin Pasture (approximately 11,860 acres) in the Warm Springs Allotment. Overall, long term adverse impacts would occur in Warm Springs Allotment Area III. This area is approximately 37,660 acres in size.

ANIMALS

Terrestrial

The following general impacts on wildlife would be unavoidable with implementation of the proposed action:

There would be some bird nest trampling and/or nest abandonment as the result of livestock grazing, especially during Treatment A and primarily in heavily used areas, such as on meadows and hillsides adjacent to streams. In two out of three pastures in the three-pasture systems, there would be no livestock grazing prior to about July 20, so any nest destruction, abandonment of nests, and/or trampling of young birds would be minimal in these pastures since most birds would fledge by this date. However, a few birds still have young in their nests in late summer and would be subject to disturbance during later grazing seasons. During Treatment A most pastures would experience concentrated livestock use in the more desirable sites and bird nests would be frequently subjected to disturbance by livestock in these areas, such as along stream bottoms. Overall impacts on bird populations (nest destruction and reduction of total bird population) with the proposed action would probably be fairly low, reducing total production in the grazed pasture by less than 5%.

High livestock use would occur on the unfenced wet meadows (approximately 100 acres) and on stream bottoms and their associated riparian vegetation. Spring grazing under Treatment A (approximately 133,000 acres per year) would be adverse to most small animals during their reproductive period, such as rabbits, mice, squirrels, voles, and

weasels by removing food and/or cover required for their subsistence or protection.

Livestock would also be concentrated in most pastures receiving Treatment B and wildlife living in these pastures during this grazing period (average of 105,000 acres per year) would be subject to disturbance and removal of protective cover and/or forage during late summer and into the fall.

High competition for forage between livestock and big game animals would occur whenever they were both dependent on forage in pastures receiving either Treatment A or B. Competition for early spring forage would be critical, especially for antelope and deer, which utilize most allotments. Big game animals may or may not move to rested pastures when forage becomes scarce in heavy livestock use pastures. High livestock use of forage in pastures receiving Treatment B would be especially adverse to the survival of newly-weaned antelope fawns that require adequate succulent forage at weaning time. The unavoidable impacts that would take place are (1) inadequate nutrition of wild animals and possible subsequent reduction in productivity, or (2) mortality of either large or small animals caused by lack of suitable forage during the most critical period in their life cycle, e.g. early spring or winter for big game animals.

Concentrated livestock use during Treatment B would result in high use of shrubs in pastures having a poor grass supply or grasses that cured (dried out) early in the summer. The importance of this impact would depend upon the need for forage in a particular pasture by big

game in winter. Livestock use on shrubs needed by big game on a critical winter range could result in inadequate forage being available to meet big game needs throughout the winter. This impact could depend partly on the severity of the winter after livestock use of a pasture and in some years could result in malnutrition in adults and poor fawn production the following spring.

The conifer vegetation type (36,862 acres), with its unique assemblage of wildlife, such as chipmunks, golden-mantled squirrels, tree squirrels, blue grouse, etc. would be lightly to moderately grazed by cattle, depending on the elevation and topography on which the trees occurred. The continuing impact from grazing in this vegetation type would be primarily the removal of cover needed to provide protection from weather and predation for some of the species.

Slopes adjacent to stream bottoms primarily located on Soil Association A (approximately 5,000 acres), would be heavily grazed by livestock because of their proximity to water. Because of their low elevation, some of these slopes are important big game winter range, primarily for antelope and deer. Intense livestock use of these important portions of big game ranges could result in increased stress and malnutrition of the big game animals depending on these ranges for winter forage.

Eighty-six miles of fencing are proposed. While construction standards would be followed to permit passage of most big game animals, a few animals would continue to get caught in the fences. This would cause some additional mortality of antelope and deer, and perhaps other wildlife, that would not have occurred without the fences.

Construction of livestock watering troughs and storage tanks invites birds and small animals to attempt to drink. Even with bird ladders (ramps) installed, a few animals and birds would fall in and drown, contributing to mortality rates of wildlife that would not have occurred without the troughs or storage tanks.

A small amount of vegetation, probably not in excess of ten to fifteen acres, would be destroyed by construction equipment if the 54 proposed spring developments are completed. A few small animals and birds at the construction sites would be displaced, but the value of this vegetation to wildlife would be relatively small and most of it would be replaced by the end of fifteen years.

The proposed 1,000-acre spray project in the Bald Mountain Allotment would remove a considerable quantity of sagebrush that could be important to wintering deer in some years, as well as to sage grouse, antelope, and small birds and animals. The impact would be reduced forage available to wildlife that might need it at different times of the year, with possible subsequent mortality of a few animals if other forage could not be found nearby.

The proposed 600-acre burn in the East Fork Allotment would kill an unknown number of small animals at the time of the burn.

The proposed 600-acre chaining project in the Road Creek Allotment would temporarily reduce sage grouse habitat on the treated area by about 70% and deer winter range by about 70%. However, the area is utilized by only a few grouse and deer so the overall impact (less total habitat available for the population) of the proposed project would be very low.

The following species-specific impact on animals would be unavoidable if the proposed action is implemented.

Deer

There would continue to be a high degree of competition for early spring forage between deer and cattle on any deer winter range receiving Treatment A, especially in the Road Creek, Warm Springs, Spud Creek, Round Valley, and Garden Creek Allotments. Moderate competition for early spring forage between deer and cattle would occur for at least the first two grazing cycles (six years) in portions of the following allotments: Road Creek, East Fork, Squaw Creek, Bald Mountain, Split Hoof, Red Lake, and Pine Creek.

The impacts of moderate to high competition for forage on deer could be: (1) possible loss of fetuses or fawns by does if good spring forage is unavailable, (2) general decline in health of adult deer, and (3) some mortality of adult deer. Early spring ranges could also be damaged during the first six years if heavy use by both cattle and deer occur during Treatment A.

Late summer and/or fall grazing by cattle as stipulated in the proposed action, would probably result in moderate to high utilization of shrubs by cattle in the following allotments: Warm Springs, Sullivan Creek, Bruno Creek, East Fork, Spud Creek, Bald Mountain, Herd Creek, Garden Creek, and Round Valley. This high use of shrubs, combined with deer utilization of the shrubs in winter, could result in gradual decline in vigor of shrubs, and death of some of the browse plants which could cause the following adverse impacts on deer: (1) some mortality

of adult deer from malnutrition, and (2) possible loss of fetuses of doe deer in winter because of inadequate diet. These types of impacts would probably occur only after Treatment B (late summer and fall use) and probably only during the first two grazing cycles (or until grass forage became sufficiently abundant to reduce some cattle use of shrubs in late summer and fall).

Bighorn Sheep

As mitigating measures, portions of the most crucial winter habitat for bighorn sheep would be fenced in both the East Fork and Garden Creek Allotments. However, other normal bighorn sheep use on areas outside the crucial areas would still be subject to either spring or fall livestock grazing (spring in East Fork Allotment; fall in south portion of Garden Creek Allotment). This would reduce winter forage available to bighorns on portions of their range and, in years of poor forage production, could result in some malnutrition or loss of a few bighorns from lack of adequate forage. Under the proposed action, the only serious unavoidable adverse impacts on the health and survival of the sheep would be expected to occur after Treatment B in years of poor forage production during a subsequent severe winter in the South Garden Creek area.

Elk

Late summer and/or fall livestock grazing would occur one year out of every three in the Spring Basin, Broken Wagon, and Corral Basin Pastures (total of 37,661 acres) of the Warm Springs Allotment which

would permit substantial use of both grasses and shrubs by livestock in areas where elk normally winter. This competition for forage could result in some malnutrition of elk in winter, especially during years of poor forage production. The impact would be greatest during the first six to eight years after the system was implemented.

Antelope

Moderate to high competition for forage between livestock and antelope would occur in portions of the proposed allotments: Road Creek, Warm Springs, San Felipe/Peck Canyon, Round Valley, Red Lake, Garden Creek, Spud Creek, and Split Hoof. During the first six to eight years there would be intensive competition for forage for antelope in the pastures receiving Treatments A and B. Impacts of this competition, especially in spring, could be (1) reduced survival of antelope fawns and (2) possible weight loss in adults. If the vegetation responds to the proposed management as predicted in the Vegetation Section (Chapter 3), there should be little adverse impact on antelope after the end of the second grazing cycle (six years).

Small Mammals and Reptiles

There would be some reduction in numbers of small animals produced in pastures receiving Treatment A because of the high amount of forage that would be removed early in the season by livestock.

Birds

Many of the wet meadows and stream bottoms would not be fenced to protect important nesting and brooding areas for grouse and other birds. During Treatment A these areas would be heavily grazed and trampled by livestock, making them poor habitat for nesting or brooding birds. Fencing of some of the wet meadows would mitigate some of this impact, but total bird production would probably be reduced by the proposed action by 3 to 5%.

Wild Horses

It is difficult to quantify residual impacts remaining after application of mitigating measures and those which would result from mitigative actions not being taken for the following reasons: (1) there is no known research on the effects of rest-rotation grazing and all that is related to rest-rotation grazing, such as fences, on wild horses; (2) in many instances, phenomena such as stress and behavioral changes are important factors, but are not easily quantified. However, general impacts are addressed in semiquantitative manner in TABLE 5-1.

Specific impacts by allotment addressed to be moderate or highly adverse are as follows:

Red Lake Allotment. The Lone Pine pasture would pose a definite short term problem for wintering horses. Presently, the pasture produces an estimated 124 AUMs and for Treatment A proposed used is 813. Horses (20-30) depending on this pasture for winter forage might experience high adverse impacts such as death by starvation or extreme malnutrition if they would not or could not move to other areas, because quality

forage to sustain them through the winter would be unavailable. The impact would be somewhat dependent on the behavior of the horses, uncontrollable factors such as the severity of winter, previous summer's vegetative growth, etc., and is therefore not quantifiable.

Warm Springs No. III. For all pastures there would be a decrease in AUMs. Treatment B would be the most significant problem. About 90 horses depend on these pastures yearlong. It is reasonable to assume that as forage for horses decreased so would the health and condition of the horses, especially horses who must winter in these pastures.

Anderson Peak Fence (Project Fence #6). Mitigating measures would be implemented. However, since the fence is open-ended near the top of Anderson Peak, which is around 9,000 feet a possibility exists that this access area for horses could be closed in winter and the horses could be trapped by heavy snow. Therefore, this fence could prevent horses from migrating to lower elevations resulting in starvation or extreme malnutrition for the animals.

Corral Basin Fence (Project Fence #15). Even though mitigating measures would decrease the impact, the fence would still lack visibility and contrast since it goes through Corral Basin proper, an area in which wild horse movement is intense. The fence would not have a skyline effect, and chances of horses colliding with the fence would be increased and the horses could be seriously injured or maimed. It would also impose limitations on horse movement, especially during the livestock

grazing season. Limitations on horse movement would affect the behavior and free-roaming habits of the wild horses, and could result in a concentration effect which could increase parasite and disease problems, and increase competition for available forage, cover, water, and living space.

Endangered or Threatened Wildlife

No unavoidable adverse impacts are expected for endangered or threatened wildlife in the unit.

Aquatic Life

The following impacts on the fishery resource would be unavoidable if the proposed action were to be implemented.

Short Term

Increased sedimentation of streambeds, loss of streambank vegetation, increased bank erosion and channel instability would impact fish habitat in lower Herd Creek (2.0 miles), Big Lake Creek (1.5 miles), and Birch Creek (2.0 miles). These adverse habitat changes would cause a temporary, unquantifiable decrease in fish populations of these streams for several years. The loss of fish production would be most significant in Herd Creek because this stream provides some of the best habitat for anadromous and resident fish within the Challis Unit.

TABLE 5-1

UNAVOIDABLE ADVERSE IMPACTS ON
WILD HORSES IN THE CHALLIS UNIT

Impact	Mitigating Measures	Remaining Impact
1. Horses forced into rested pastures with related behavior and habit changes, and resulting, concentration effects.	None	Moderate 1/
2. Fences possibly injuring horses, restricting movement, or trapping them during the winter even after mitigation.	Refer to Chapter 4	Moderate
3. Red Lake Allotment - Wintering horses suffering from a lack of quality forage in the Lone Pine Pasture.	None	High 2/
4. Warm Springs Area III: decreasing in AUMs - causing a decrease in the health and condition of the horses (especially wintering horses).	None	High
5. Anderson Peak Fence (Project Fence #16) - injuring the horses or restricting their movement.	Refer to Chapter 4	Moderate
6. Corral Basin Fence (Project Fence #15) - injuring the horses or restricting their movement.	Refer to Chapter 4	Moderate

1/ Moderate - The impact would be perceptible, but adverse effects would not increase the overall mortality rate for the horse herd as a composite.

2/ High - The impact would result in a higher mortality rate than the present, but the influence would not prevent the minimum number of 150 animals to be maintained.

Short term increases in sediment yield from overland flows in the following allotments could impact important anadromous fish habitat in the lower East Fork and Salmon River by increasing sedimentation of their streambeds; San Felipe three pasture, Warm Springs, Split Hoof, and Road Creek. Increased sediments would also occur from eroding streambanks in the Big Lake and Lower Unit 2 of the Lake Basin pastures, and from sediment yield in the Spar Canyon Pasture. Other probable sources of increased sediments that could enter the Salmon River are the Squaw Creek Allotment and the Lone Pine, Penal Gulch and Jeff's Creek pastures. Wherever increased sedimentation of streambeds occurs, fish populations decrease due primarily to lowered survival of eggs and young fish, less aquatic organisms available for food and reduced rearing habitat.

Temporary losses of fish production that would be caused by increases in sedimentation of the East Fork and Salmon River are estimated to be relatively small. These streams are large in size, and most erosion usually occurs during high spring runoff which carries sediment further downstream before it settles to the stream bottom. Fish habitat downstream from the Challis Unit would, therefore, be adversely impacted.

The above impacts of sedimentation on stream habitat and fish populations would be reduced to slightly less than existing conditions by the end of fifteen years if increased vegetation and improved soil conditions occur as predicted.

Some increase in sedimentation of streambeds resulting from water developments, fence construction, and vegetative manipulation would be unavoidable. The residual impact on aquatic habitat and fish production

should be insignificant because mitigating measures would control most of the possible soil loss from the projects.

Accidental release of chemicals from the proposed spray project in the Bald Mountain Allotment could have short term impacts on aquatic life. This would not be likely because of the mitigating measures and Bureau procedures which would be followed. No fish would be killed if toxic chemicals do not reach perennial waters inhabited by fish. If mitigating measures fail, some fish living in the Salmon River could be killed. The severity of such a fish kill would depend on the amount of material entering the river and its chemical formulation.

The possibility of the proposed burning project in the East Fork Allotment getting out of control would be slight. If this should happen, short term impacts on fish habitat could include loss of streamside vegetation, increased sedimentation and nutrients added to several small streams and Jimmy Smith Lake. Production of trout fry in lower Corral Creek could be reduced a moderate amount for several years if streamside vegetation were badly burned along a mile or more of the stream. Overall, the trout population in Jimmy Smith Lake would probably not be affected much by such an accident because the largest tributary (Big Lake Creek) would not be impacted by the project.

Some streamside vegetation would be destroyed along the Salmon River by construction of a cattle trail in the Spud Creek Allotment. There would be a short term increase in sediments going into the river as a result of construction of the trail. Some sediments would enter the river annually from cattle watering at this site. There would also be an increase in animal wastes entering the river at this point. Loss

of fish production in the Salmon River resulting from this project should be relatively small because of the large flow of the Salmon River.

Long term

Adverse impacts on streams within the Road Creek watershed and on their fish populations could continue after fifteen years with the proposed action. The impacts would be due to increases in grazing use in the San Felipe three pasture and Warm Springs Area III Allotments. These increases would occur during two out of three years, and the impacts may not be compensated by one year of rest in each pasture.

Most livestock in smaller pastures would increase total use along streambanks during the three-year period, which would result in the following impacts on fish habitat: (1) continued heavy use of streambank vegetation; (2) increased streambank trampling causing bank erosion; (3) sedimentation of streambeds; (4) stream channel instability; and (5) increased animal wastes. These adverse effects on stream habitat would probably cause a small decrease in existing fish populations of parts of Road Creek, Mosquito Creek and Bear Creek. Data are unavailable for use in estimating the magnitude of loss.

Livestock use would be adjusted in the Spring Basin and Corral Basin pastures of the Warm Springs Area III Allotment to mitigate some impacts on vegetation (refer to Chapter 4). This administrative mitigation would decrease proposed use by 113 AUMs during Treatment A and increase proposed use by 225 AUMs during Treatment B in both pastures. Impacts on fish populations discussed in Chapter 3 would, therefore, be

decreased 13% during Treatment A and increased 10% during Treatment B. Livestock use in the Road Creek Watershed after mitigation would be as follows compared with present use: (1) 13% less use during year 2, (2) 13% more use during year 3, (3) 41% more use during year 4, and (4) an overall increase of 13% more use during the three-year grazing system (was 12% before mitigation). Little change in the overall net impact on fish populations would be expected due to this administrative mitigation.

VISUAL AND RECREATION RESOURCES

The following impacts to the interrelated visual and recreation resources would be unavoidable with implementation of the proposed action.

The proposed actions which would disturb vegetation and soil would modify the naturalistic landscape. The degree of residual disturbance from range improvements and livestock grazing would correspond directly to the application of visual resource contrast ratings in project design and the success of rehabilitation measures taken subsequent to project development. Regardless of how successful the mitigating measures were, there would be some modifications to basic elements, but the total impact would be low.

The "skylining" of fences and use of fence materials visible to wild horses, other wildlife, and humans would encroach on the visual scene.

The physical presence of improvements and livestock in presently unused portions of the unit would reduce opportunities for recreationists seeking solitude.

The trucking and trailing of livestock to and from national resource lands (NRL) or between pastures would cause localized dust conditions and lower visual quality for short durations.

A threat from wild fire and potential safety hazards to recreationists may occur in rest pastures due to heavy vegetative growth.

Where geologic features cannot be avoided in project development, the damage or physical presence of such improvements would affect the quality of sightseeing experiences.

The fencing of pastures in the wild horse area would detract from the public image of wild horses being free-roaming. This knowledge would lower the quality of the sightseeing experience and other people would derive less satisfaction about wild horses by knowing that fences exist in wild horse ranges.

AGRICULTURE

The adverse impacts on agriculture have in general not been quantified or specifically identified for each of the livestock operators in the Challis Unit. Most of the adverse impacts that would affect agriculture cannot be effectively mitigated by BLM and are, therefore, unavoidable. Later turnout dates in some allotments could delay irrigation and adversely affect hay production on base properties. Although hay is generally in short supply due to limited quantities of irrigated lands and a short growing season, the impact on hay production is judged to be of minor significance.

Reduced grazing on NRL in some allotments would be an adverse impact. Decreased levels of grazing use would occur in 6 allotments involving 20 operators with a total decrease of 573 AUMs. For the livestock industry and the Challis Unit as a whole, levels of grazing use would be increased 2,463 AUMs lending stability to livestock operators. On an individual basis, reduced levels of grazing appear to be unavoidable. These adverse impacts are also discussed in the Socio-economic Section of this chapter.

Although maintenance of improvements constructed to implement the AUMs and some additional movement of livestock would result in long-term benefits to livestock operators, the additional labor requirement of about 200 man days annually could be considered an adverse impact.

CULTURAL RESOURCES

Damage and destruction would continue to occur at known cultural resource sites for three years even with full implementation of mitigating measures described in Chapter 4. This would continue until the proposed cultural resource management activity plan could be initiated. These sites are unique, and vulnerable to all levels of ground-disturbing activities, including trampling by livestock, and streambank and gully erosion.

Damage to unknown sites and subsurface sites not discovered during project surveillance would be almost certain to occur. In cases where salvage mitigation is required, the impact would not be fully mitigated. Salvage of cultural resources is an unavoidable adverse impact. Once excavated, a site is effectively destroyed and removed from future research considerations which may utilize new techniques. Salvage is rarely as effective as nonsalvage research programs, partially because of time limitations, funding, and personnel competence. Emergency salvage, required by unexpected discoveries during project initiations, would be even less effective.

The construction of improvements needed to implement the proposed AMPs would be by contract and would be accomplished over a three-year period. Construction would require about ten to twenty employees during a period when local employment is highest. Construction of the improvements could place demands on the local contract construction work force. It appears possible some of the existing work force could be attracted to construction of the improvements. This could result in a shortage of contract construction employees in Challis which could delay local projects. Failure to complete construction projects on schedule or difficulty in starting new projects would be expected to produce adverse impacts. These impacts have not been quantified. Similarly if the construction of improvements attracted employees from other sectors with relatively few employees, some adverse impacts could occur. Additional labor required for maintenance of improvements, once constructed, would be accomplished or supplied by livestock operators in the Challis Unit. These impacts are considered unavoidable.

Reduced levels of livestock grazing in six allotments involving twenty livestock operators would result in adverse economic impacts. These impacts have not been identified for each individual operator who would experience decreased grazing use. A decrease of 573 AUMs would be shared by twenty operators. Some individuals would experience a decrease of one or two AUMs which essentially is no change. Other individuals would experience a decrease of over 100 AUMs.

There is a wide variety of attitudes and opinions of the public about the Challis Unit. The proposed action would be expected to result in adverse social impacts. The proposed action would conflict with personal attitudes and values. It is highly unlikely that all individuals and groups would view the proposed action as being in harmony with their personal opinions and values. Livestock operators may experience a sense of loss stemming from increased federal control and, in some cases, decreased levels of grazing use. Other interests may be disappointed that the proposed action is multiple use oriented and not limited to their own special interest. The variety of attitudes and values evident indicate some adverse social impacts would result. These have not been explicitly identifed or quantified. A continuing program to keep people advised of management actions, resource conditions, and resource uses would partially mitigate the impacts. However, the adverse social impacts are predominantly unavoidable.

CHAPTER 6

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

For purposes of this analysis, short-term is defined as the period of time required to achieve the AMP objectives (approximately fifteen years after implementation). Long-term is the period of time beyond fifteen years in which impacts, as a result of project implementation, would still occur.

The proposed action would implement AMPs on sixteen allotments (321,481 acres NRL), and continue to exclude livestock grazing on one allotment (9,136 acres NRL). Range improvements would occur on approximately 240 acres. Vegetative manipulation would occur on approximately 2,200 acres.

During the first three years, approximately 2,440 acres of land within the unit would be disturbed by proposed improvements and vegetative manipulation. Construction activities associated with these improvements would result in some short-term loss of productivity.

SOIL-VEGETATION

The proposal would cause short-term losses of soil and vegetative resources as a result of increased concentration of livestock in certain pastures. Construction and vegetative manipulation would also cause short-term losses to occur locally on these resources. However,

stabilized productivity and long-term gains would occur for these resources after the third cycle of the grazing system (6-9 years).

The proposed grazing system would improve productivity (over 12,000 additional AUMs) of the soil and vegetative resource through deferred grazing and rest-rotation. These long-term benefits would occur in the form of improved species composition and more desirable and vigorous plants for soil protection, wildlife, and livestock use. Increased infiltration, permeability, and decreased erosion would result.

Long-term improved wildlife habitat and increased populations would also be associated with soil and vegetation stabilization and recovery. Water quality is predicted to stabilize and improve as a result of decreased sediment yield.

WATER RESOURCES

Water quality and fish habitat in several streams of the Challis Unit would decline locally during construction, vegetative manipulation and early stages of the grazing cycle. However, long-term productivity of the Challis Unit streams, would improve as a result of less tons (22,646/year) of sediment being deposited into the stream after the grazing system becomes established and stabilized.

ANIMALS

Terrestrial

Wild animals could temporarily be displaced by range improvement and vegetative treatment activities. Many of the improvements involve developing new or improving existing water sources, and would include provisions for wildlife watering. The period of disturbance or displacement would generally be of short duration. Assuming that livestock AUM use would not be increased and wild horses would be managed according to recomendations in the wild horse plan, the additional 12,346 AUMs (132% increase) could be obligated to wildlife.

Wild Horses

Wildlife, wild horses, and livestock may compete for the same forage. Initially, there would be increased competition for forage between wildlife and livestock in the use pastures. As vegetative productivity improves through the grazing cycle, competition between animals would diminish in many pastures, but competition for forage on crucial big game winter range would continue over the long-term.

Aquatic Life

In most streams within the Challis Unit, habitat conditions for fish production are predicted to improve gradually during the fifteen-

year period as vegetative ground cover increases and soil conditions improve. Over the long-term there would be less sedimentation of streambeds, some increases in streambank vegetation, lower summer water temperatures, and increased streambank and channel stability which would improve conditions for salmonids and increase basic productivity of streams.

Some short-term adverse impacts are expected to occur in about six and one-half miles of four streams. Habitat conditions would temporarily decline when grazing systems are first implemented but would return to existing conditions by the end of the fifteen-year period. About thirteen miles of streams would improve in condition classification (poor to fair or fair to good), 17-1/2 miles would continue to be in good condition, and approximately 51 miles of the remaining habitat would be in either fair or poor condition.

The long term productivity of approximately six miles of fish-producing habitat in upper Road Creek and several tributaries would be reduced slightly by the proposed action.

Short-term impacts from development projects should not diminish long-term productivity of aquatic habitat. Long-term productivity of Herd and Jimmy Smith Lakes would not be changed much by the proposed action.

AGRICULTURE

Farming

The later turnout or opening dates for grazing proposed in some of the AMPs would result in livestock being held on private lands for longer periods in early spring. In some instances individuals would have to defer irrigation of these lands which could decrease hay production. However, the decrease would probably be an imperceptible short-term loss.

FOREST MANAGEMENT

Increased concentrations of livestock would result in additional grazing within timber stands which would cause some short-term losses on seedling establishment and wood production. These short-term losses would be most evident in the first few years of grazing. It is predicted that long-term productivity would be unaffected.

VISUAL RESOURCES

The development of range improvements and the contrasts between rest and use pastures would modify some naturalistic landscapes.

These intrusions would cause slight vegetative or soil disturbance that would diminish with rehabilitation. Disturbance of soil, vegetation, geologic features, or coloration patterns would leave some permanent landscape scars reducing the long-term quality of the visual resources. In perspective, overall visual quality should improve within the unit.

RECREATION RESOURCES

A negligible acreage in the Challis Unit now available for recreation would be lost to this use by permanent range improvements. Opportunities to hunt and view wildlife may be temporarily lost by the disruption of animals during project development.

After the project is implemented, some pastures being grazed would be less desirable for recreation use during the grazing season because of the presence of livestock.

The presence of livestock and range improvements may destroy the integrity of some areas, limiting the value of historic, geologic, ecologic, or scenic areas for public interpretation.

The long-term improvement of vegetation, watersheds, aquatic and terrestrial wildlife habitats should enhance recreation opportunities in the unit.

CULTURAL RESOURCES

Inventory and assessment of perhistoric and historic resources directly affected by the proposal would provide immediate gains in scientific knowledge of the area and provide a data base for long-term gains.

The proposed action would have some minor short-term losses on employment while improvements are constructed. The action would be predicted to have no long-term effects on either population or employment.

The livestock industry is an integral segment of the Challis economy. economy. Although grazing of NRL represents a small percentage of livestock industry income, it is considered important. The proposed action would tend to stabilize the level of grazing use of NRL, which has shown a gradual decline since 1948. Short-term losses or decreased levels of grazing use in six allotments would be offset by increased grazing use in ten. The proposed action would stabilize and improve both the quantity and quality of livestock forage in the long-term. Income attributable to livestock grazing on NRL would be stabilized in the short-term and probably increase in the long-term. Long-term benefits would be assessed to exceed short-term losses or income from the livestock industry.

Some ranch units tend to be valued according to number of animals units which can be run, stabilizing and increasing levels of grazing use would stabilize and increase ranch values with a corresponding increase in tax revenues.

CHAPTER 7

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Human resources used in implementing this proposal are considered to be irreversible and irretrievable. Monies, fuel, and materials used to develop the proposal are considered to be irretrievable.

Archeological and other historical, scenic, or cultural values which may be inadvertently destroyed as a result of proposed actions are also considered to be irretrievable. Development of the soil resource has occurred over hundreds of years. Soils eroded as a result of the proposed action are considered to be irretrievable. Except as noted above all other resources involved in this proposal are retrievable and/or reversible. Those include such resources as livestock, wildlife, vegetation, and wild horses.

SOILS AND WATERSHED

Top soil that is displaced by erosion as a direct result of the proposed action is irretrievable. However, sediment yields with the proposed action would be reduced more than 22,000 tons annually.

VEGETATION

Grazing by domestic livestock, wild horses and wildlife under the proposed action would consume 33,580 AUMs (13,432 tons) of forage annually. However, this is a renewable resource and is considered to be retrievable and reversible. Construction of improvements and vegetative treatments would remove approximately 2,500 acres from current production for the life of the improvements/treatment. This is considered to be an irretrievable but not irreversible commitment.

Elimination of any endangered or threatened (ET) plant species through implementation of the proposed action would be an irreversible commitment. However, such loss is not predicted.

ANIMALS

Terrestrial and Aquatic

With the exception of the loss of a species, all wildlife populations are considered to be renewable resources and are retrievable providing, their habitat is not converted to other uses and soil resources are preserved.

VISUAL RESOURCES

Any disturbance to surface soil or rock colors, erosion patterns, or geologic features which would leave a permanent scar on the landscape is considered to be irreversible. Physical project facilities which would be intrusions on the naturalistic landscape are considered to be irretrievable for the life of the facility.

RECREATION RESOURCES

Actions that displace terrestrial or aquatic wildlife would reduce the quality of consumptive and nonconsumptive recreation opportunities. Such actions would be considered irretrievable during occurrence but are not considered to be significant for this proposal.

CULTURAL RESOURCES

Proposed livestock grazing and development of facilities could disturb certain cultural resources. Once disturbed, historical and archaeological sites as well as artifacts are no longer available for future study. This can result in a data gap in the history of an area and would be considered an irretrievable commitment.

LOSS OF POWER AND MATERIALS USED IN DEVELOPMENT

Fuel and materials consumed in support of the proposed action would be expended over the project life and are considered to be an irretrievable commitment.

CHAPTER 8

ALTERNATIVES TO THE PROPOSED ACTION

Six alternatives to the proposed action are addressed in this chapter. They are (1) no action, (2) discontinue livestock grazing, (3) implement proposed AMPs on nine allotments and defer livestock grazing and intensity of use on others, (4) implement proposed AMPs on nine allotments and discontinue grazing for a period of five years on the remaining seven, (5) implement proposed AMPs for eleven allotments and manage five as one pasture three-treatment rest rotation systems and (6) implement proposed AMPs on five allotments, restricting use for the first two grazing cycles on four allotments, and adjusting season of use dates and AUMs for the remaining seven allotments.

In addition to assessing the above alternatives, custodial management was also considered. For custodial management conditions in each allotment were evaluated by the following criteria to determine if the alternative was viable: (1) present range condition is acceptable, (2) the BLM is satisfied with present level of management, (3) there are no overriding resource conflicts, and (4) only a small amount of NRL involved in the allotment. As a result of the evaluation, it was concluded that none of the allotments meet the criteria for custodial management.

For all alternatives, wild horse numbers would be reduced and maintained at 150-300 animals in accordance with the Challis Wild Horses Management Plan. Malm Gulch Frail Lands would continue to be excluded from domestic livetock use, and trespass control throughout the unit would be strictly enforced.

Resources or components are addressed in terms of impacts, mitigative measures, and adverse unavoidable impacts for each alternative. Emphasis is on the discussion of subject areas assured to be most important.

NO ACTION (ALTERNATIVE 1)

Description

For this alternative it is assumed that the intensity of management would continue as before the suit by NRDC, et. al., and that grazing of livestock would continue at the present level not to exceed the six-year average use of 17,426 AUMs.

The Herd Creek AMP would continue to be administered in accordance with the agreement with the Forest Service which predated the NRDC suit. Other AMPs would not be implemented.

Maintenance of range improvements would be performed as necessary. New range improvements would be limited to those authorized under Section 4 permits, cooperative agreements, or those constructed with range improvement funds derived from grazing fee receipts. In TABLE 8-1 developments which would be implemented over 10-15 years by BLM are listed. There would be a continuation of other management functions, i.e., for timber, wildlife, minerals, recreation.

TABLE 8-1

DEVELOPMENTS WHICH WOULD BE IMPLEMENTED BY BLM

FOR THE NO ACTION ALTERNATIVE

	FENCES		SPRINGS		PIPELINE	
Allotment	Miles	Cost($)	No.	Cost($)	Miles	Cost($)
Garden Creek	2 mi.	5,000	-	-	-	-
Round Valley	2 mi.	5,000	3	900	1.5 mi.	2,000
Split Hoof	2 mi.	5,000	6	1,800	-	-
Bald Mountain	1 mi.	2,500	1	300	1 mi.	1,500
Road Creek	-	-	5	1,500	-	-
San Felipe/ Peck Canyon	3 mi.	7,500	7	2,100	-	-
Bruno Creek	-	-	-	-	-	-
Thompson Creek	-	-	-	-	-	-
East Fork	1 mi.	2,500	3	900	-	-
Herd Creek	1 mi.	2,500	3	900	-	-
Red Lake	-	-	6	1,800	3 mi.	6,000
Pine Creek	1 mi.	2,500	3	900	-	-
Sullivan Creek	-	-	-	-	-	-
Spud Creek	-	-	3	900	-	-
Squaw Creek	-	-	2	600	-	-
Warm Springs	8 mi.	20,000	12	3,600	5 mi.	10,000
TOTALS	21 mi.	52,500	54	16,200	10.5 mi.	19,500

Impact Analysis

Soil and Water Resources

There has been a substantial amount of nonuse (approximately 20% of the total active qualifications) taken by various permittees within the Challis Unit over the past six years.

Lower stocking rates, have probably permitted ground cover to increase in areas remote from water, thus improving soil retention. Few benefits have occurred in the vicinity of waters, wet meadows, or other preferred grazing areas.

Provisions for periodic rest periods are not provided by the present domestic livestock grazing program (except for Herd Creek AMP) unless individuals or groups voluntarily elect to do so. If present management were to continue, the productivity of repeatedly grazed areas would continue to decline (MAP 2-27, TABLE 2-49). If vegetative productivity were to diminish animals would, of necessity, range into more inaccessible areas. Consequently, the ground cover of these less accessible areas would also be reduced, particularly during years of subnormal forage production. During years of above average forage production, less accessible areas would possibly receive no grazing, thereby allowing partial recovery.

Where channel erosion is occurring it would become more active unless structural works are deployed to reduce the water velocity and sediment loads. Channel erosion and sedimentation loss would continue from drainages including Spar Canyon, Lone Pine, Penal Gulch and Malm Gulch. Increase in Malm Gulch would likely be the result of intensified use by wild horses as competition for food would become greater in the

Red Lake, Split Hoof and Warm Springs Allotments, stimulating horses to enter the Malm Gulch area.

As vegetation would become less available for soil protection, there would be a greater dependency on small rock to form the protective surface on the soils. Therefore, soils which contain large volumes of rock on or near the surface would be less impacted than those with very little rock in their surface horizons. Because of this, soil association D with very little rock in the surface profile would become more vulnerable to surface erosion from both wind and water actions. If competition for food were to become greater, both wild animals and domestic livestock would be forced onto the steeper slopes and less productive areas promoting greater surface disturbance and soil loss. In fifteen years an estimated 247,000 tons of sediment per year would continue to be lost from the unit, representing an increase of 20,616 tons (TABLE 8-2). The sedimentation rate on the increase would be accompanied by greater suspended sediment loads in streams. Concentrations of dissolved solids would also be expected to elevate. Some localized channel straightening could occur, resulting in increased water velocities and bank cutting. For the alternative, a decrease of water quality in area streams would be predicted.

TABLE 8-2

PREDICTED SEDIMENT PRODUCTION FOR ALTERNATIVE 1

Soil Association	Present Yield Tons/Year	Yields in 15 years Tons/Year	Difference
A	15,500	17,050	+ 1,550
B	2,908	3,272	+ 364
C	33,031	36,917	+ 3,886
D	173,640	188,110	+14,470
E	1,384	1,730	+ 346
Total	226,463	247,079	+20,616

Mitigation. For developments (TABLE 8-1) project sites would be evaluated via the BLM Environmental Analysis Report process and measures would be committed by BLM to minimize soil losses. At this time it is not possible to precisely define measures because site analyses have not been conducted.

Unavoidable Adverse Impacts. All impacts exclusive of those for developments would be unavoidable. Sediment loss would be 97,695 tons per year in excess of normal losses which would occur if domestic livestock grazing were not occurring and wild horses in game populations remained constant.

Vegetation

If present livestock grazing management were to continue, vegetation trends would be expected to decline. Present vegetation trends are described in the Future Environment section of Chapter 2. In general,

continuation of the present program would result in continued deterioration of range conditions (TABLE 2-49) unless some management were initiated. Management would continue on the Herd Creek Unit (24,688 acres) for which an AMP is in effect. This should result in improvement in vegetative conditions. The Herd Creek Allotment consists of about 6% of the total acreage within the unit and would not appreciably affect the overall trend in range condition for the Challis area.

Domestic livestock typically graze national resource lands in the Challis Unit between May 1-16 with some remaining until early summer. However, some late summer and fall use occurs (TABLE 2-37). The ranges are being grazed more or less continuously in the same manner year after year. Under this type of grazing use the most desirable and important plants for livestock grazing would be utilized first and often and would not maintain sufficient leaf material to produce and store food necessary for plant growth. This is especially harmful during the spring growing period when the plants are growing most rapidly and root reserves are lowest. Heavy grazing use in the spring would not allow the desirable and important plants for livestock use an opportunity to maintain their vigor, produce seed, establish new seedlings and maintain their relative abundance or percent composition in the stand. The less or undesirable plants for livestock use would either not be grazed or grazed less severely. Therefore, they would maintain their vigor, produce seed, establish seedlings, and increase in abundance. The most desirable and important plants for livestock would, therefore, be gradually eliminated and replaced with less desirable plants resulting in less usable forage and subsequent range deterioration (Hormay, 1970).

It is estimated with a continuation of the present grazing use that after fifteen years vegetative conditions would be as follows:

VEGETATIVE CONDITION (ACRES)

	Poor	Fair	Good
Present	81,924	177,455	17,701
After 15 Years	114,860	150,845	11,375
Difference	+32,936	-26,610	-6,326

After fifteen years the unit would produce a total of 24,423 AUMs compared to the present production of 29,842 AUMs or a loss of 5,419 AUMs.

With respect to endangered and threatened plants which are palatable to cattle and wildlife it is assumed that in areas where range trend or conditions are declining, they could be eventually eliminated. The converse would be true for undesirable species. Where trend and conditions are stable, the plants would maintain themselves.

Mitigation. For this alternative it is assumed management would continue as before the suit by NRDC, et al., and mitigation for vegetation would not be instituted except for rare or threatened species, if BLM studies provide information about protective measures which should be taken.

Unavoidable Adverse Impacts. Since there would be no mitigation, all presently known adverse impacts would be unavoidable.

Terrestrial Animals

The continuation of present grazing practices would result in a gradual downward trend of wildlife habitat resulting in lowered carrying capacity for wildlife in most areas of the planning unit. In the San Felipe/Peck Canyon Allotment, which contains good habitat for sage grouse, blue grouse, and antelope, present grazing practices and management would

probably continue to maintain reasonably good habitat for these species. In most other allotments the most important wildlife habitat, such as wet meadows, stream bottoms, bighorn ranges, antelope ranges, and certain browse stands consisting of mountain mahogany and bitterbrush would continue to deteriorate. Riparian habitat along streams, some of the most important habitat for a large variety of species within the unit, would continue to receive heavy grazing year after year with the result that stream-bottom meadows and associated forbs and grasses, as well as willows and aspen, would continue to decline.

Canyon slopes and hillsides adjacent to valley bottoms would continue to receive heavy grazing because of their close proximity to water. Many of these areas contain stands of sagebrush and bitterbrush that are essential to big game herds in winter. The two bighorn sheep bands on the East Fork of the Salmon River and main Salmon River depend on the low-elevation, rocky hillsides for their winter forage. Competition with domestic livestock for the forage is presently high when combined with periodic livestock trespass, and continued competition would probably be adverse to the reproduction and survival of these bighorn bands.

Most pastures receive livestock grazing every year in the spring providing no years when birds, small animals, and big game can complete their reproductive processes without competition and disturbance from livestock and man. Forced movement of livestock by man from season to season, or from pasture to pasture, is an additional disturbance factor to wildlife. Such disturbance would continue each year.

Occasional years of high precipitation and optimum temperatures occur at irregular intervals to produce exceptional vegetative growth. Conditions for optimum survival of young wildlife in the spring and summer would also occasionally occur. These infrequent years would permit some recovery of wildlife populations, but overall populations of the smaller wildlife species would continue to decline because of deteriorating habitat unitwide. Deer populations are currently below the carrying capacity of their crucial ranges and the Idaho Department of Fish and Game might permit their numbers to increase slightly through control of harvest. This assumption was made in estimating numbers of big game that would probably be present in the unit in 1990.

Proposed water developments (54) would be beneficial to many species of wildlife, provided, livestock would not be drawn into big game forage areas not being currently used by livestock due to water limitations. Water development could encourage increased use of forage by livestock in these areas resulting in adverse competition with wildlife.

In addition, 21 miles of fencing is planned to control livestock (TABLE 8-1). The fences would be constructed in conformance with BLM Manual 1737 so as to be passable by big game animals using the area. An occasional deer or antelope would probably become entangled in a fence and die.

Approximately 10 miles of pipeline would be constructed to facilitate water distribution. Installation of additional water facilities would generally permit an increase in wildlife populations in the vicinity of the water.

A brief discussion follows for each of the major wildlife species or groups in the unit relative to trends in their habitat that would probably occur if the alternative were to be implemented. Estimated impacts that would probably occur for wildlife resources in the individual allotments are in TABLE 8-3. Values in the table for the alternative and the remaining five allotments, represent the relative beneficial or adverse impacts that would probably occur. The impact relates to the influence of livestock grazing on nutrition and survival of wildlife in the winter and on productivity, survival, stress, and competition in the spring. Livestock grazing, and the associated removal of forage and cover that could be utilized by wildlife, is only one of the many factors that influence production, health, and survival. A value of "1" represents a low effect or impact meaning that the ordinary removal of forage by livestock prior to a normal winter would probably affect the survival, nutrition, and reproduction of big game less than 5%. During a severe winter, when forage would be less available because of livestock grazing, overall effects would be slightly higher. A low impact on small wildlife means that livestock grazing would probably influence total populations less than 5%. A value of "2" represents a moderate effect or impact, i.e., removal of forage by livestock prior to a normal winter would probably affect the survival, nutrition, and/or reproduction of big game from 5 to 15%. In a severe winter, overall effects might be as much as 30%. A moderate impact on small wildlife species means that livestock grazing would probably influence total populations between 5 and 20%. A value of "3" represents a high effect or impact, i.e., removal of forage by livestock prior to a normal winter would probably affect the survival, nutrition, and reproduction of big game between 15 and 40%.

TABLE 8-3

RELATIVE DEGREE OF IMPACT THAT LIVESTOCK GRAZING WOULD HAVE ON VARIOUS TYPES OF WILDLIFE AND THEIR HABITAT IN THE ALLOTMENTS IN THE CHALLIS PLANNING UNIT FOR ALTERNATIVE 1.

Legend

1 = Low Impact 1/
2 = Moderate Impact
3 = High Impact
- = Little or No Impact
S = Spring
F = Fall

	Competition for Forage Between Livestock and Deer		Competition for Forage Between Livestock and Elk		Competition for Forage Between Livestock and Antelope		Competition for Forage Between Livestock and Bighorn Sheep		Competition for Forage Between Livestock and Small Mammals		Livestock Use of Wet Meadows, Stream Bottoms and Riparian Vegetation		Competition for Forage/ Cover with Conifer Dwelling Wildlife		Impact of Livestock on Nests of Ground and Shrub-Nesting Birds		Remarks
	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F	
Bald Mountain	3	3	1	1	1	1	-	-	2	1	3	2	2	2	1	1	All values shown on this table are relative degrees of adverse impacts.
Bruno Creek	2	2	-	-	-	-	-	-	1	1	1	1	2	1	1	1	
Garden Creek	3	3	-	-	3	3	1	3	2	1	3	2	-	1	1	-	
Herd Creek	3	3	1	1	2	2	-	-	2	2	3	3	1	2	1	-	
Red Lake	2	1	-	-	3	3	-	-	3	2	3	3	1	2	1	-	
Road Creek	3	3	-	-	3	2	1	2	2	1	3	2	1	1	1	-	
San Felipe/Peck Canyon	2	3	-	-	2	2	-	-	2	2	3	2	-	-	1	-	
Squaw Creek	1	1	-	-	-	-	-	-	1	1	2	2	-	-	1	-	
Warm Springs	3	3	1	3	3	3	-	-	2	2	3	2	1	1	2	1	
East Fork	2	3	-	-	2	-	2	3	2	1	3	2	1	1	1	-	
Pine Creek	2	2	-	-	-	-	-	-	2	2	3	2	1	1	1	-	
Round Valley	3	2	-	-	3	2	-	-	3	1	-	-	-	-	2	-	
Maraffio (East Fork)	3	1	-	-	3	1	-	-	2	-	-	-	-	-	1	-	
Woolley (Salmon)	3	1	-	-	3	1	-	-	2	-	-	-	-	-	1	-	
Spud Creek	3	3	-	-	3	2	-	-	3	2	3	3	1	1	3	-	
Sullivan Creek	3	3	-	-	-	-	-	-	3	1	3	2	-	-	1	-	
Thompson Creek	1	-	1	1	-	-	-	-	1	-	2	-	-	-	1	-	

1/ 1,2,3 = Relative degree of adverse impacts

In a severe winter, overall effects might be as much as 40 or 50%. A high impact on small wildlife species indicates that forage removal by livestock would probably influence total populations of individual species between 20 and 40%. Some effects of forage competition in the spring would be (1) malnutrition of adult deer, (2) inadequate milk production for young fawns, (3) reduced cover for small wildlife to protect them from weather and predation, (4) malnutrition of adult antelope, and (5) increased stress in both deer and antelope in finding sufficient forage to maintain high energy levels. Effects of forage reduction in the fall could be (1) inadequate forage to sustain big game in winter, (2) reduced fawn production caused from malnutrition in winter, (3) poor cover available to many small forms of wildlife in winter, including sage grouse and rabbits, and less seeds remaining on grass plants for the maintenance of small birds.

Mule deer. Resident deer populations are presently low, but many deer from the higher National Forest lands depend on BLM winter range depicted on MAP 2-13.

Deer winter ranges in the area from Garden Creek to Bayhorse Creek in the Garden Creek Allotment are generally in fair condition, with a few areas in poor condition. Ranges from Bayhorse Creek to the junction of the East Fork of the Salmon River with the Salmon River are in poor condition. Wintering areas on the west side of the East Fork are generally in fair condition. If present grazing practices continue and additional use by occasional trespass livestock occurs, the ranges in poor condition would continue to deteriorate, especially at lower elevations, and some of the ranges in fair condition would eventually develop to the poor category.

With deer numbers at their lowest level in approximately fifteen years, it is expected that both the general public and the Idaho Department of Fish and Game will establish an objective of rebuilding the herds to allow greater hunter success. In areas where browse species are grazed by livestock and deer in the fall and winter and grass in the spring are grazed by both cattle and deer (and perhaps elk and bighorns), there would continue to be a decline in vegetative condition. Some adjustment in numbers of cattle would be required to prevent continued loss of plants and reduction in plant vigor. Maintenance of low big game populations would permit some increase in vigor of browse species but would do little to assist recovery of understory grasses and forbs, so essential to maintenance of soil stability.

Deer winter ranges in the vicinity of Willow Creek Summit would continue to be in fair condition unless livestock numbers were increased or elk numbers increased beyond the carrying capacity of the adjacent areas now used only lightly by domestic livestock. The mountain mahogany stands in this area produce considerable forage that is also utilized by elk. If elk numbers were maintained at present levels, these stands would likely remain in a healthy condition.

The Round Valley deer winter ranges are presently in fair condition. Only small numbers of deer presently use these ranges, and it is expected that they would remain in fair condition for a number of years with continued livestock grazing and gradually decline to a poor condition rating. In this area cattle have been the primary cause of the gradual range deterioration because of the heavy use on grasses and forbs.

Deer winter ranges on the east and north sides of Lone Pine Peak are classified as poor; on the west and south sides they are classified as fair. Cattle and wild horses graze all around Lone Pine Peak, while deer and antelope graze the west side in summer and the east side in winter. These areas are predominantly sagebrush ranges and it is expected that conditions would gradually decline with existing use by cattle, horses, and big game. The mountain mahogany zones on the east side are producing young plants and the stands are generally in good condition. They would likely maintain themselves in good condition. In TABLE 8-4 the estimated percentage of habitat change which would occur for deer (and other important game species) is entered.

Bighorn sheep. Bighorn sheep winter ranges in both the Birch Creek and East Fork Allotments are classified as fair. However, the lower elevation zones, which include the cliffs and rocky areas most used by the sheep generally lie within a few hundred yards of the valley bottom and are in poor condition. Both areas are currently used by cattle and are grazed during the spring and in late summer or early fall. With a continuation of this type of use, much of the grass forage required by bighorns, but accessible to cattle, would be gone before the sheep migrate from the higher country on the National Forest. Continued cattle use prior to the arrival of the bighorns, would cause the winter habitat for the sheep to remain in poor condition. A few deer also use these areas in winter. Excessive use of grasses and forbs would promote the encroachment of less desirable shrubs for sheep use such as rabbitbrush, snakeweed, and sagebrush. Bighorns forage primarily on bluebunch wheatgrass and mountain mahogany in winter, so an increase in sagebrush on these ranges would be adverse to bighorn sheep.

TABLE 8-4

ESTIMATED PERCENTAGE OF HABITAT CHANGE THAT WOULD BE EXPECTED TO OCCUR FOR THE IMPORTANT GAME SPECIES IN THE CHALLIS PLANNING UNIT WITH CONTINUATION OF THE NO ACTION ALTERNATIVE COMPARED TO PROPOSED ACTION 1/

Wildlife Species and Habitat Type	Improving		Declining	
	Poor to Fair	Fair to Good	Fair to Poor	Good to Fair
Deer				
Winter Range				
(With Proposal)	20%	20%		
(Alt. 1)			20%	10%
Elk				
Winter Range				
(With Proposal)	20%	20%		
(Alt. 1)			15%	10%
Antelope				
Yearlong Range				
(With Proposal)	25%	25%		
(Alt. 1)			20%	10%
Summer Range				
(With Proposal)	25%	25%		
(Alt. 1)			15%	10%
Bighorn Sheep				
Winter Range				
(With Proposal)	40%	40%		
(Alt. 1)			25%	10%
Sage Grouse				
Brooding/Nesting				
(With Proposal)	35%	35%		
(Alt. 1)			25%	
Winter Range				
(With Proposal)	35%	35%		
(Alt. 1)			20%	20%

1/ The percentages of habitat changes were derived for all alternatives after considering: (1) the allotments involved and the amount of habitat therein for each of the important game species, (2) the amount of change in habitat condition that would be expected with different degrees of livestock use and different types and periods of rest included in the systems, (3) the amount of use and impact on habitat condition that the game animals themselves would produce, (4) the degree of competition for forage between the various game animals and the livestock in the separate allotments, and (5) adverse impacts on habitat in a few allotments caused by wild horse use.

With only limited and poor forage available to the sheep, lamb production and survival would likely decline in a few years. Despite this, sheep numbers would probably increase to about 100 in the East Fork herd and to about 50 in the Birch Creek herd during the next fifteen years with continued protection.

Elk. Mountain mahogany areas used by elk in winter in the Squaw Creek, Warm Springs, and Garden Creek Allotments are generally in good condition and provide much of the forage used by elk in winter. The sagebrush-grass range in the vicinity of Willow Creek Summit is in fair condition but grass-sagebrush ranges in the other winter use areas are classified as being in poor condition. Non-use by the grazing licensee has permitted the Willow Creek Summit range to develop into fair condition range and would be expected to continue on a static or upward trend unless the livestock operators were permitted to activate non-use or the elk herd were permitted to build much beyond present numbers. Low elevation ranges heavily used by cattle in spring and/or fall would continue to be classified as poor elk habitat because most grasses normally included in their diet would be gone by the time the elk arrived on the range, usually in late November.

Elk are gradually increasing and it is expected that numbers would probably increase from the present 200 to about 275 on winter ranges in the planning unit in the next fifteen years.

Pronghorn antelope. Some of the ranges in the planning unit are in good condition for antelope, while others are in poor condition. Generally, Bradbury Flat with its shadscale and saltbrush vegetation complex is poor habitat for antelope, while Antelope Flat, Bradshaw Basin and

Horse Basin are in fairly good condition for antelope. The grass and sagebrush-grass ranges are the most preferred type by antelope in the Challis Unit. Areas having healthy sagebrush with a good understory of grasses and forbs are most often used. Many antelope travel to higher ranges in summer to seek more succulent vegetation.

Ranges that are deteriorating from a fair to poor condition generally show an increase in sagebrush, rabbitbrush, and snakeweed, or a change from perennial to annual grasses. Up to the stage where sagebrush becomes approximately 30% of the composition, the range would be improving as yearlong antelope habitat, assuming there would still be a good density of desirable grasses and forbs remaining on the area. As heavy livestock grazing continued to remove additional grasses and forbs from the composition, the habitat would gradually become less desirable for antelope.

If present grazing practices were to continue, it would be expected that most of the low elevation ranges would lose more of their desirable species of grasses and forbs for antelope and become more dominated by rabbitbrush and snakeweed. Higher elevation ranges would remain more stable, especially where lack of water curtails livestock use. If water were developed on the higher slopes, vegetation changes would be dependent upon the seasons and length of time livestock were permitted to be grazed. Under present game management objectives, it is not expected that deer and elk would be permitted to increase much beyond present numbers. However, antelope are wide-ranging and, therefore, have little impact on localized areas of range, such as deer do on small restricted areas.
Antelope numbers might be expected to increase by about one-fourth to approximately 1,300 during the next fifteen years.

Black bears and Mountain lions. Since both black bears and mountain lions are wide-ranging and use the more isolated areas of conifer stands, rugged hillsides, and mountain slopes, it is unlikely that continuation of present grazing practices would affect them detectably. Their numbers are relatively few in the planning unit, and it is not likely that long term vegetative changes would promote enough change in the associated prey base to affect their continued survival.

Small game and Furbearers. All species of rabbits undergo cyclic fluctuations independent of subtle vegetative changes that occur in their environment. They frequently thrive on ranges that are in poor condition for larger grazing animals. It is not expected that noticeable changes in their numbers or fluctuations would occur solely as a result of continuation of the current grazing practices.

Muskrats, mink, beaver, and otters are usually associated with rivers, streams, or ponds and the associated riparian vegetation. Continued heavy livestock grazing along stream bottoms would destroy some of the reproductive shoots of willows, aspen, and alders, and other shrubs, leaving less food and cover for those species of wildlife normally using riparian vegetation. Heavy streamside grazing by livestock reduces habitat needed by a variety of rodents and birds, thereby, diminishing the supply of prey available to mink, weasel and other predators.

Pine martens are restricted to conifers at higher elevations. Their prey is primarily tree squirrels and other rodents, and continuation of existing grazing practices would have little influence on their lives.

Nongame Mammals. Most species of small rodents do well in heavily grazed sagebrush communities. Sufficient grass and forbs can normally be found among shrubby plants to meet their needs since cattle have difficulty in foraging among the sharp, woody stems of sagebrush and other associated shrubs. Since coyotes, bobcats, and foxes are dependent upon the rabbit and rodent prey base, it is unlikely that they would be much affected by a continuation of present grazing practices. A narrow zone immediately adjacent to the valley bottoms is already in very poor condition, with very few grasses or forbs. It is expected that this condition would continue.

Birds. Habitat conditions for sage grouse are much the same as those for antelope. Habitat desirability declines as the sagebrush understory of grasses and forbs decreases, or as sagebrush height increases beyond about fifteen inches. Grassland ranges that are gradually converting to sagebrush would be improving for sage grouse until the percent of sagebrush in the composition exceeds approximately 30%. Continuation of existing grazing practices in most low elevation areas would also cause a continued gradual decline in the grass and forb species, making the habitat less suitable for grouse.

Wet meadows and/or stream bottoms are of paramount importance to grouse for brooding their young. These areas are among the most heavily grazed by cattle, making them less suitable for grouse. Green plant parts, seeds, and berries are needed by adult grouse, while the young utilize large quantities of insects associated with these areas, as well as green grass and other plant parts. Grouse use these areas for raising their young at the same time that cattle are authorized to graze them.

Continued use of these areas under present management would cause further reduction of the forbs in the composition, and trampling of wet meadows would induce additional hummocking with increased erosion. Spring sources adjacent to the wet meadows on some sites have been heavily trampled resulting in destruction of aquatic vegetation that would otherwise grow there. The trampled areas would gradually increase in size with further breakdown of the sod under present grazing systems.

Grouse populations fluctuate because of several factors, of which habitat is only one. Over the fifteen-year period, their numbers would probably remain about the same as at present.

Brooding requirements for blue grouse are very similar to those for sage grouse in the planning unit. They frequently nest and brood their young adjacent to streams and then move to coniferous groves to winter. The coniferous winter habitat is satisfactory and unlikely to change under existing grazing practices, but the crucial stream bottoms and wet meadows would likely continue to degrade. In late summer and fall the birds seek out berries from forbs and shrubs. This type of vegetation is gradually becoming depleted because of present grazing practices and would become more scarce in the future.

Ruffed grouse prefer dense vegetation along stream bottoms or hillsides covered with mountain brush. This species is scarce in the unit because of lack of suitable habitat. Continued grazing practices that would deplete the vegetation along water courses would be detrimental to them, just as for sage and blue grouse. Spruce grouse may or may not be present in the units. It is unlikely, however, because of their preference for stands of lodgepole or limber pine, that continuation of

present livestock grazing practices would adversely impact birds that might live in the unit.

Cheatgrass, both blades and seeds, are preferred by chukars. They seek out burns and other denuded areas where cheatgrass predominates. Halogeton seeds are also highly favored. Steep, rocky hillsides provide the needed escape cover. With this type of habitat requirement, it is unlikely that excessive grazing by livestock would have significant adverse impacts on their populations.

Hungarian partridge predominantly utilize edges of agricultural areas and it is unlikely that continuation of present grazing practices would adversely affect their populations.

Continuation of present grazing practices would not be expected to have significant impacts on populations of ring-necked pheasants, mourning doves, or waterfowl in the unit. Birds of prey are affected by livestock grazing practices primarily in the way that changes in vegetative composition affects prey populations. Platt (1975) conducted a raptor survey during August 1975 and concluded that these birds were more commonly located on fair to good condition ranges. He believed this occurred because of greater abundance of rodent prey species on the ranges having good vegetation composition. Assuming this is generally true, then livestock grazing that would cause a reduction in total plant cover or reduce the variety of plant species would also reduce the desirability of the habitat for birds of prey. Raptor species depending on small birds for prey would probably find greater numbers of victims on ranges having a good variety of grasses, forbs, and browse. Continuing the current grazing

practices, then, with a gradual decline in range condition, would be adverse to most species of birds of prey.

Ranges in good condition generally provide the best habitat for most song and insectivorous birds because the diversity of vegetation in many stages of growth provides for the greatest variety and numbers of insect prey. Some areas of the planning unit are fairly stable and in good condition. Little change would likely occur in these areas, but low-lying areas and zones in poor condition would probably continue to deteriorate with a corresponding reduction in the density and variety of plant species which would cause a decline in numbers of bird species. Over-grazing of riparian habitats by livestock would also result in less suitable feeding and nesting areas for the birds living there including many species of shore birds. Overall, song bird species and numbers would likely change very little during the next ten to fifteen years if present grazing practices were to continue.

Reptiles and Amphibians. Reptiles thrive on partly denuded ranges so long as insect prey is abundant. While insect species present in an area change with changes in vegetative composition, it is unlikely that reptile species present in the unit would suffer for lack of food.

Condition of the habitat for frogs, toads, and salamanders would continue to deteriorate because of increased trampling of pond banks, streambanks, and wet or marshy meadows. Increased trampling would eventually induce greater erosion causing more sediment in the aqueous environment for all aquatic species. This would be adverse to the general reproduction and survival of all amphibians in the unit. Despite the gradual deterioration of habitat for reptiles and amphibians, long-term populations of both groups would likely remain much as they are at present.

Invertebrates. Continued heavy grazing of stream drainages would produce greater stream sedimentation gradually changing the composition of species in aquatic environments from those living on rocks, sand and gravel to species preferring mud or silty bottoms, i.e., from certain species of mayflies, stoneflies, and caddisflies to annelids and Chironomids (midges). A reduction in the variety of grasses and forbs on rangelands usually reduces the species and numbers of insects found in those areas because of the loss of plant species preferred. This is especially true of many grasshopper species that thrive best on green grass. The total impact of livestock grazing on invertebrate populations is unknown.

Wild Horses. Adequate forage would be available for horses. The 1974-75 range survey recheck in the wild horse area provided information indicating that forage is available for a maximum population of approximately 300 horses. This is based on the estimated winter range, which is the limiting factor for the animals.

With present livestock management situation, wild horses have the advantage of using much of the rougher, steeper country that livestock are not using because of steepness of slope or lack of water. For the no action alternative livestock grazing would remain much the same and the competitive advantage for horses would continue.

New fencing projects would be limited in number, which would be conducive in maintaining the present free-roaming habits and behavior of the wild horses.

If present management were to continue, it is not predicted that horses would decrease below their minimum level of 150.

Summary. The greatest impacts on wildlife occur with either early apring or late summer and fall livestock grazing. When early spring grazing occurs, it is assumed there will be competition with deer, antelope, elk, and bighorn during their reproductive period when they use ranges jointly with livestock. It is also assumed there would be high use of all wet meadows and stream bottoms when cattle are turned into pastures having these types of habitats because in these areas the most luxuriant and palatable forage for livestock is produced stimulating cattle to "camp" there.

When birds nest in meadows along stream bottoms, they are in danger of being trampled since cattle in large numbers will step on virtually every square foot of open ground along a stream or in a wet meadow during a two-month period. Birds such as killdeers, phalaropes, plovers, and sandpipers commonly nest on the ground near streams or other aquatic habitats.

It is not known how much small mammals, reptiles, and amphibians are impacted by livestock grazing. As a result of studies it has been concluded that populations are generally lower in grazed areas than in ungrazed areas, whether because of reduced forage, cover, or predation.

Mitigation. It is assumed mitigation for actions other than those for improvements as listed in TABLE 8-1 would not be implemented.

Unavoidable Adverse Impacts. Since there would be no mitigation for actions other than those involving improvements, all impacts would be unavoidable.

It was assumed for purposes of this alternative that because (1) the horse herd is increasing in size, (2) numbers would be reduced to a maximum of 300, and (3) horses have a competitive advantage over livestock and wildlife, continuation of the present livestock management program would not result in unavoidable adverse impacts.

Aquatic Life

Sedimentation of streambeds would continue at approximately the same rate as at present where overgrazing by livestock is occurring. Where watershed conditions are declining, increased sedimentation would result from overland flow, channel erosion, and streambank trampling. Populations of salmon and trout would be further impacted in these streams by reduced survival of eggs and developing embryos in redds, increased predation of fry due to less escape cover in gravel-rubble areas, and a reduction of preferred food organisms. Where the apparent range trend is upward (MAP 2-12) (Thompson and Kinnikinic Creeks) less sedimentation of streambeds would occur with corresponding increases in fish populations.

Other important habitat components such as the stability of streambanks and channels and streambank vegetation would remain essentially in the same condition for most streams in the unit. However, in some areas channel erosion could become more active, i.e., Spar Canyon, Lone Pine Creek, and Penal Gulch. These are not fish-producing streams, but increased channel erosion would impact important downstream fish habitat and cause further decreases in fish populations. Summer water temperatures and the amount of animal wastes deposited directly into streams would remain unchanged.

Some unavoidable sedimentation of streams which cannot be predicted with a reasonable degree of accuracy would result from construction of fences and water developments (springs and pipelines) planned for this alternative. The impact on fish populations would be short term and slight in nature.

Streams with poor habitat conditions for fish production would remain in poor condition with present grazing practices unless special measures to improve fish habitat are undertaken. Tributary streams in fair or good condition would begin to decline where watersheds are deteriorating, resulting in reduced productivity and smaller fish populations.

Habitat conditions for streams adjacent to NRL in the Challis Unit would be the same for this alternative as discussed in Chapter 2 for the future environment. A comparison between present habitat conditions and those expected with this alternative are summarized as follows:

STREAM HABITAT CONDITION CLASSES

	Present Conditions (Miles)			Conditions with No Action Alternative (Miles)		
	Good	Fair	Poor	Good	Fair	Poor
Anadromous & Resident Fish	15.5	13.1	4.4	14.5	14.1	4.4
Resident Only	2.0	24.5	22.2	2.0	15.8	30.9
Totals	17.5	37.6	26.6	16.5	29.9	35.3
Percent( )	(21)	(46)	(33)	(2)	(37)	(43)

An estimated 9.7 miles of stream habitat in areas listed below would decline in condition:

Stream	Change in Condition	Estimated Miles
East Fork	Good to Fair	1.0
Lake Creek	Fair to Poor	2.8
Road Creek	Fair to Poor	.8
Warm Springs Cr.	Fair to Poor	1.5
Mill Creek	Fair to Poor	3.6
	Total	9.7

Important populations of anadromous fish produced in streams within the Challis Unit would remain at current levels of low abundance unless mortality problems at downstream dams are resolved. If downstream mitigation were to occur (mainly at dams on the Snake River), native chinook salmon and steelhead runs could increase to about their former abundance of the late 1960s.

If the apparent downward trend of range conditions for 1975 were to continue, a small decrease in populations of trout and whitefish would occur due to increased sedimentation of streambeds. Nongame species living in tributary streams would probably also experience a similar decline.

Species of special concern to the Idaho Department of Fish and Game in the unit include spring and summer chinook, steelhead, whitefish, Dolly Varden, and cutthroat trout. These species are of concern because of declining populations, or problems caused by stream channel alteration, irrigation diversion, and overgrazing by livestock. Continuation of

present grazing practices would cause a slight decrease in populations of these species due to continued sedimentation and other habitat changes.

Westslope cutthroat trout (subspecies) may occur in several streams within the planning unit. Cutthroat in Road and Kinnikinic Creeks were tentatively identified as westslope cutthroat from their body markings during a partial stream survey by Rabe, et al., in 1975. This subspecies is also of special concern to the Idaho Department of Fish and Game because of declining populations and sensitivity to habitat changes. The cutthroat population in Kinnikinic Creek should increase slightly due to an upward trend in apparent range condition in Kinnikinic pasture. Conversely, a small decrease in the cutthroat population in upper Road Creek would probably occur because of the downward trend in range condition in the upper watershed.

Little change in fish populations of either Jimmy Smith or Herd Lake would be expected with this alternative.

Mitigation. It is assumed measures would not be implemented.

Unavoidable Adverse Impacts. All identified impacts would be unavoidable.

Agriculture

Livestock Grazing. Livestock grazing would be predicted to follow trends described in Chapter 2, Future Environment without the Proposed Action. Based on records since 1948 there has been a gradual decline in licensed grazing use of approximately 269 AUMs annually. The trend is probably a result of a decline in available forage, fluctuations in livestock prices, and other financial considerations and variables. The

production of vegetation probably would continue to decline in the unit should present management continue. This would result in decreasing numbers of livestock use, decreasing production of calves, and reduced income from the sale of livestock. It is estimated that livestock numbers utilizing NRL in the unit would decline about 20% within fifteen years (refer to Vegetation and Socio-economics sections for this alternative).

Visual Resources

The Bureau's limited capability to administer resource management programs would prevent all actions of range management from being in compliance with visual management objectives because adequate technical assistance could not be provided. For this reason, all actions associated with the range program, the grazing of livestock and development of range improvements would be potentially damaging to the naturalistic landscape. Improper design and location of projects could cause unacceptable modifications to the basic elements of form, line, color and texture.

Vegetative conditions would continue to deteriorate resulting in scars on the landscape and a detraction from the visual quality of the unit.

Changes in vegetative composition and reduction in density would change the color and texture thereby impacting the naturalistic landscape.

Without adequate grazing management, livestock tend to concentrate near water. This concentration of animals causes vegetative trampling, soil compaction and vegetative removal near stockponds and troughs. Along water courses animals strip streamside vegetation and trample streambanks. These actions for the alternative would scar the visual

landscape and could reduce visual qualities of recreation waters by increasing sedimentation and turbidity. In TABLE 8-5 the degree of impacts for visual resources is summarized.

Unavoidable Adverse Impacts. Landscape scarring from construction of inadequately supervised range improvements and the addition of unauthorized structures would be in conflict with visual resource management objectives.

Excess forage depletion would change the color and texture of vegetation and impact the naturalistic landscape.

Concentration of livestock would modify the landscape by trampling and vegetation removal, resulting in degradation of the visual quality of recreation waters.

Recreation Resources

Livestock would continue to concentrate near water bodies. Most water bodies have recreation value either for nonconsumptive uses (boating, swimming, sightseeing) or for consumptive uses (fishing). The presence of animals makes recreation use along the streams less desirable because of trampling and defecation. The latter can result in bacterial concentration to exceed water quality standards acceptable for water contact activities. Populations of fish would decrease and result in reduced opportunities for fishing and for fish viewing.

Improperly managed livestock use would affect the wildlife habitat through direct forage competition which could reduce populations of wild animals and lessen the quality of the nonconsumptive and consumptive recreation uses associated with them.

TABLE 8-5

DEGREE OF IMPACT FOR ALTERNATIVE 1*

Resource	Proposed Action	Alternative 1
Visual	- 1/	-
Recreation	+	-

1/

+ Slightly beneficial

++ Moderately beneficial

+++ Highly beneficial

- Slightly adverse

-- Moderately adverse

--- Highly adverse

* Recreation use in activities other than what is directly associated with aquatic and terrestrial wildlife is expected to increase at the same rate regardless of which livestock grazing alternative is imposed on the Challis Unit. Rankings in this table reflect the effects the alternatives have on wildlife habitats which result in direct impacts to wildlife-associated recreation use.

Livestock would continue to concentrate along roads and major tourist routes causing traffic hazards (presently assessed to be minor).

If present management were to continue, portions of the unit would not be used by livestock, nor would there be encroachments by range improvements. Those seeking a "backcountry" experience away from man's activities would still have the opportunity in portions of the unit.

Since wild horses will be managed according to the proposed wild horse plan, opportunities to view wild horses would remain good.

In TABLE 8-5 semiquantitative ratings of impacts on recreation for the alternative are listed.

Unavoidable Adverse Impacts. The concentration of livestock near water bodies would conflict with intensive recreation use.

Opportunities to fish and view aquatic wildlife would be reduced.

The populations of wild animals would be less, and the associated recreation opportunities would be reduced.

Livestock concentrating along roads would cause hazards to recreation travelers.

Cultural Resources

A continuation of present management would result in adverse impacts to cultural resources which were identified in TABLE 2-37, Chapter 2. With the exception of 106/2(b) statements 1/ being prepared for proposed

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1/ A formal statement which addresses undertakings that adversely affect properties listed, nominated or eligible for placement on the National Register of Historic Places. The President's Advisory Council on Historic Preservation must be allowed to comment on the action prior to its implementation.

grazing improvement projects (assuming the recommendation contained in the statements are followed), no other mitigation measures could be initiated. This would mean that 184 cultural sites, including 37 National Register eligible properties, and an unknown number of the estimated 750 unknown cultural sites would continue to be disturbed by livestock grazing and related activities.

Beneficial impacts to cultural properties under this alternative would be limited to those which would accrue as a result of recommendations contained in 106/2(b) statements.

Unavoidable Adverse Impacts. Same as those identified in Chapter 3 for proposed action.

Socio-economic Conditions

Recent history of Custer County has shown a gradual population decline. However, it is predicted that in fifteen years the population of the county and Challis would increase by 3,260 and 1,130 persons respectively, due to an increase in pursuit of recreation opportunities and proposed mining operations.

The trend of a gradual decline in the percentage of people employed in agriculture would probably continue as would the trend towards fewer and larger farms and ranches. Improvements in farm and ranch operations, mechanization, and perhaps rising costs of labor would influence some reduction in the numbers of persons employed in agriculture. Based on employment records of the State of Idaho, it is predicted agricultural employment would decline about 2% annually. Employment in the trades and services sectors, dependent on a wide variety of factors, would

probably continue to increase. Employment by state and federal government would be expected to increase less than 1% annually--or 8 to 9% within fifteen years.

Personal income is predicted to increase in Custer County at an approximate rate of 7% annually. Similarly, per capita income would probably rise in the foreseeable future.

Industry income, barring a major expansion of mining operations, would follow current trends with little change in the percentage each industry now contributes.

Livestock products, especially cattle and calves, would be expected to continue to contribute over one-half of all agricultural income. Cash receipts should continue to increase. The amount of increase depends on commodity prices and no estimates have been made. Operating costs should level out with a strengthening of prices received. A clear trend is difficult to quantify since net farm and ranch income is dependent on variable costs and prices--but agricultural income should increase.

Income from livestock is related to herd size or numbers of livestock in general. The historical record of grazing use of NRL in the Challis Unit, as discussed in Chapter 2, shows a gradual decline in numbers of livestock and AUMs of grazing use. Since 1948, the average decrease in grazing use has been about 269 AUMs annually. The reason for this decrease may be due to several factors, but is primarily attributed to a lack of forage.

If this trend were to continue, grazing use would decrease to about 13,400 AUMs by 1990, a decline about 23% below the six-year average

active grazing use. Based on trends of the vegetation, it has been estimated that this alternative would result in a decrease of about 18% within fifteen years. Considering both the trend line and projected response of vegetation, a 20% decrease in livestock forage and active grazing use (about 3,485 AUMs) over a fifteen-year period seems reasonable (FIGURE 8-1).

A reduction in active grazing use of NRL, if not replaced by other forage, would be accompanied by some loss of livestock income. This income loss can be estimated at about $1,146 annually using methodology described in Chapter 2 (268.91 AUMs x $2.85 x 1.495 = $1,145.76). A cumulative loss of about $137,520 would be expected over a fifteen-year period. This results from compounding the loss of the previous year; e.g., $1,146 in year 1; $1,146 + $1,146 = $2,292 in year 2; $2,292 + $1,146 = $3,438 in year 3; etc.

For a perspective of the impacts of this loss, $1,146 represents about seven-hundredths of 1% of the income effect of the livestock industry in Custer County. The $1,146 represents about three-tenths of 1% of the income effect of forage from NRL in the county. In year 15, a loss of $17,190 represents about 1% of the income attributable to livestock in Custer County in 1970 and about 6% of livestock income directly from NRL.

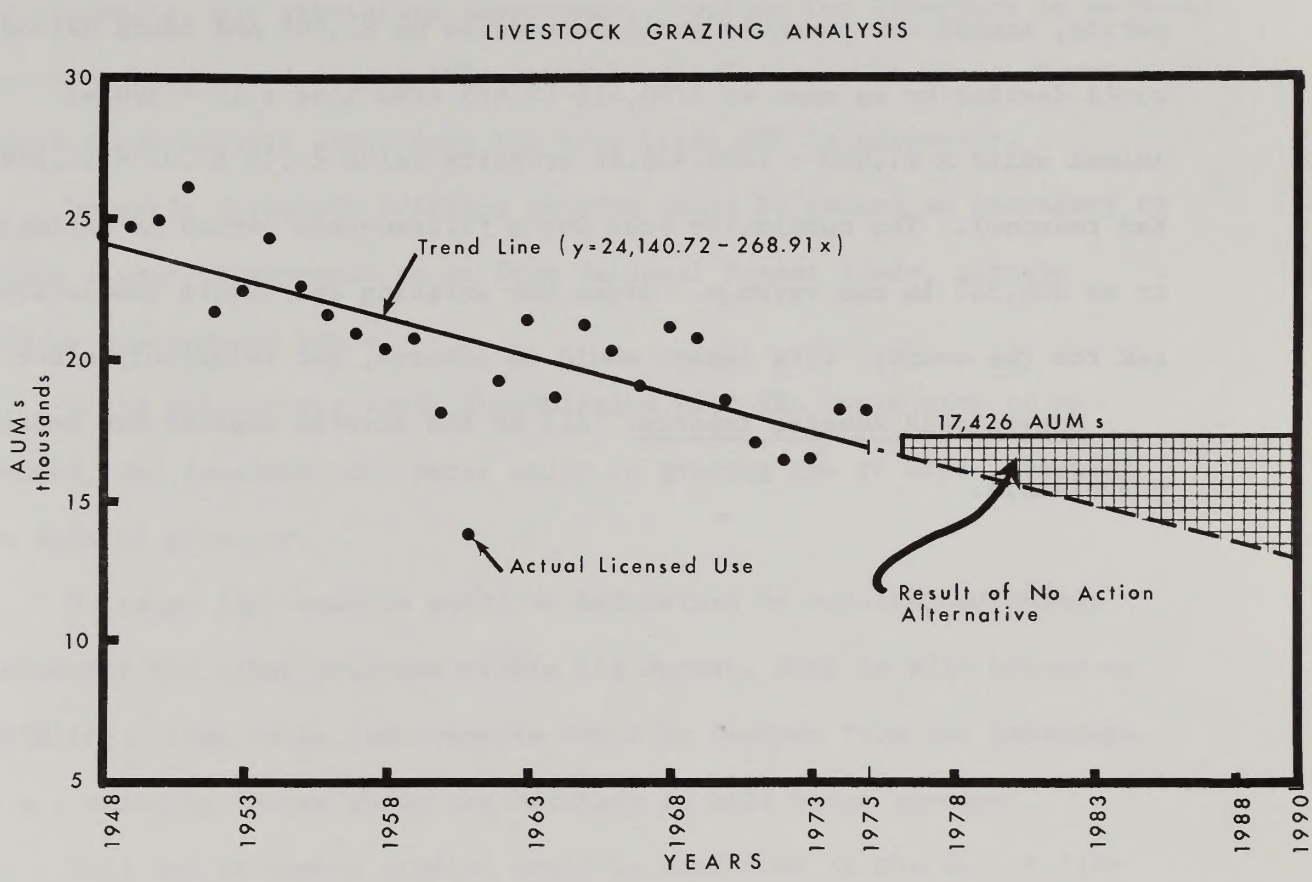


FIGURE 8-1 LIVESTOCK GRAZING ANALYSIS ALTERNATIVE NO. 1

This alternative would also result in continued erosion of the tax base with an attendant loss of tax revenue. As stated above, if no action is taken the trend toward declining active grazing use would probably continue. It is estimated that at the end of a fifteen-year period, annual tax revenues would be reduced by $2,846 and ranch values could decline by as much as $290,416 (3,485 AUMs loss ÷ 12 = 290.41 animal units x $1,000 = $290,416.66 property value x .14 x .07 = $2,846 tax revenue). The cumulative loss for a fifteen-year period is estimated to be $26,362 in tax revenue. Given the existing and future cumulative tax for the county, this impact would be adverse, but relatively minor.

Unavoidable Adverse Impacts. All of the adverse impacts are considered unavoidable.

DISCONTINUE DOMESTIC LIVESTOCK GRAZING (ALTERNATIVE 2)

Description

There would be no grazing of domestic livestock, implementation of developments, nor vegetative improvement programs for livestock on national resource lands, and no new AMPs would be developed. The Forest Service would cooperatively administer the Herd Creek AMP by agreement.

Domestic livestock trailing permits would be issued as necessary to allow livestock movement to or from National Forest lands, private and/or state-owned lands.

State and private lands intermingled with NRL would have to be fenced, and developed for water prior to grazing use to avoid trespass on federal property.

No range improvements would be maintained or constructed unless necessary for other programs within the Bureau, such as wild horses or wildlife. Some range improvements would be removed from the landscape, i.e., existing fences which are barriers to wild horse movement.

Soil and watershed studies would be conducted at the end of five years to assess results of the alternative action. There would be a continuation of other management functions, i.e., those for timber, wildlife, minerals and recreation at existing levels of use.

Impact Analysis

Soil and Water Resources

Adverse impacts attributed to livestock grazing would decrease with time. Some could resume, particularly along streams and within wet meadow areas, if big game populations were to increase dramatically.

Increases in total ground cover and reduced overland flow would occur on the upland areas as soil infiltration rates increased. Stream sedimentation would be lowered and eventually stabilized at its natural geologic rate in addition to rates attributed to effects which wild animals and new land uses would exert.

Periodic wildfires would be expected to occur and would probably burn large areas due to the type of and increase in quantity of fuels. Burning would result in fluctuation of stream water quality and sediment production from the area. However, burning could also result in improved cover with less sediment being produced in subsequent years.

Much of the streamside land in the unit is privately owned. This would probably be fenced for use in the continuation of individual stock farm operations. If these operations became uneconomical, the lands would probably be subdivided and sold as recreation homesites. If this were to happen, sediment production could increase once again due to off-road vehicle use and/or new roads within the area.

Predicted sediment production for the alternative at the end of fifteen years is as follows:

Sediment Yield

Soil Association	Present Yield Tons/Year	Yield With 1/ Alternative #2 Tons/Year	Difference Tons/Year
A	15,500	10,230	- 5,270
B	2,908	1,890	- 1,018
C	33,031	21,762	- 11,269
D	173,640	114,602	- 59,038
E	1,384	900	- 484
Total	226,463	149,384	- 77,079

1/ Does not include estimates for factors including sediment production as a result of changes in use of private land or wildfires.

Vegetation

If livestock grazing were discontinued, an additional 24,165 AUMs (TABLE 8-6) of forage would be produced in fifteen years. This would be an 81% increase over present production.

The same rationale and procedure for determining effects on vegetation by treatment and the percent of the potential that would be realized in fifteen years as a result of livestock management was used for this alternative (and following ones) as for the proposed action.

For the alternative, plants presently being grazed by domestic livestock would have the opportunity to complete normal life processes every year. They could store maximum root reserves, maintain high vigor, produce seed, reproduce themselves and increase in abundance and relative composition in stands. Forage that would otherwise be utilized by livestock would become litter and gradually be incorporated into the soil as additional organic matter. There would be no harmful impacts from the trampling action of livestock resulting in better soil/water relationships and improved conditions for plant growth.

TABLE 8-6

RATING FOR ESTIMATING AUM PRODUCTION FOR ALTERNATIVE 2

Allotment	Palatable Plants 1/									Unpalatable Plants 1/									TOTAL NUMERICAL RATING = % Production Potential Realized 1/	DIFFERENCE IN PRESENT PRODUCTION AND POTENTIAL	ESTIMATED ADDITIONAL AUMs	
	CARBOHYDRATE RESERVES AND PLANT VIGOR	SEED PRODUCED	SEED SHATTERING AND TRAMPLING	SEEDLING ESTABLISHMENT	LITTER ACCUMULATION Soil Fertility	CONCENTRATING LIVESTOCK Plants Affected	SOIL COMPACTION Plant Growth	NUMERICAL RATING	CARBOHYDRATE RESERVES AND PLANT VIGOR	SEED PRODUCED	SEED SHATTERING AND TRAMPLING	SEEDLING ESTABLISHMENT	LITTER ACCUMULATION Soil Fertility	CONCENTRATING LIVESTOCK Plants Affected	SOIL COMPACTION Plant Growth	NUMERICAL RATING		AUMs	5 yrs	15 yrs
Red Lake	B+	B+	N	B+	B+	N	B+	45	B-	B	N	B-	B-	N	B+	24	69	2923	337	2017
Herd Creek	B+	B+	N	B+	B+	N	B+	45	B-	B-	N	B-	B-	N	B+	21	66	3070	338	2026
Road Creek	B+	B+	N	B+	B+	N	B+	45	B-	B-	N	B-	B-	N	B+	21	66	2408	265	1589
Bruno Creek	B+	B+	N	B+	B+	N	B+	45	B-	B-	N	B-	B-	N	B+	21	66	37	4	24
Round Valley	B+	B+	N	B+	B+	N	B+	45	B-	B-	N	B-	B-	N	B+	21	66	1895	209	1251
San Felipe (3 past.)	B+	B+	A-	B+	B+	N	B+	42	B-	B-	A-	B-	B-	N	B+	18	63	4574	48	288
San Felipe (4 past.)	B+	B+	N	B+	B+	N	B+	45	B-	B-	N	B-	B-	N	B+	21	66	2417	266	1595
Warm Springs Area I	B+	B+	N	B+	B+	N	B+	45	B-	B-	N	B-	B-	N	B+	21	66	4351	480	2872
Warm Springs Area II	B+	B+	N	N	B+	N	B+	36	B-	B-	N	N	B-	N	B+	21	57	6593	628	3758
Warm Springs Area III	N	N	A-	N	B+	N	B+	15	N	N	A-	N	B-	N	B+	9	24	4479	179	1075
South Garden Creek	B+	B+	N	B+	B+	N	B+	45	B-	B-	N	B-	B-	N	B+	21	66	2037	224	1344
North Garden Creek	B+	B+	N	B+	B+	N	B+	45	B-	B-	N	B-	B-	N	B+	21	66	2651	292	1750
Hillside	B+	B+	N	B+	B+	N	B+	45	B-	B-	N	B-	B-	N	B+	21	66	36	4	24
Bald Mountain	B+	B+	N	B+	B+	N	B+	45	B-	B-	N	B-	B-	N	B+	21	66	2247	248	1483
Thompson Creek	B+	B+	N	B+	B+	N	B+	45	B-	B-	N	B-	B-	N	B+	21	66	230	25	152
Split Hoof	B+	B+	N	B+	B+	N	B+	45	B-	B-	N	B-	B-	N	B+	21	66	822	91	543
Squaw Creek	B+	B+	N	B+	B+	N	B+	45	B-	B-	N	B-	B-	N	B+	21	66	804	89	531
Spud Creek	B+	B+	N	B+	B+	N	B+	45	B-	B-	N	B-	B-	N	B+	21	66	782	86	516
Pine Creek	B+	B+	N	B+	B+	N	B+	45	B-	B-	N	B-	B-	N	B+	21	66	558	61	368
East Fork	B+	B+	N	B+	B+	N	B+	45	B-	B-	N	B-	B-	N	B+	21	66	928	102	612
Sullivan Creek	B+	B+	N	B+	B+	N	B+	45	B-	B-	N	B-	B-	N	B+	21	66	526	58	347
																		44368	4034	24165

1/ Summation for plants palatable and unpalatable for livestock use. Refer to TABLE 3-5 for methodology.

For rare, and endangered plants, implementation of the alternative would be beneficial.

Terrestrial Animals

Wildlife populations would have more vegetation available for use as food and cover within the unit which would permit the development of healthier, as well as larger populations of most species. Mortality which may presently be caused by competition for forage with domestic livestock would be eliminated. When deer, elk, antelope, and bighorn sheep returned to traditional winter ranges each year, they would find adequate forage available for their maintenance during this crucial period, providing their numbers would not increase to the point exceeding carrying capacity.

The source of domestic livestock diseases and parasites that are transmittable to wildlife would be eliminated except from those livestock grazing private, state, or other lands. Diseases such as scabies and lungworm would gradually have less impact on wild populations of bighorn sheep.

General habitat conditions for most species of wildlife would improve. Key sites, such as wet meadows and stream bottoms, would develop much better habitat for a wide variety of species. Certain types of stream bottom vegetation would become rank, making these areas less desirable for grouse but more desirable for some species of amphibians and birds.

There would be less disturbance of wildlife by either livestock or livestock operators carrying out necessary activities associated with

livestock management. Nest trampling and/or abandonment caused by livestock would be eliminated. Game bird strutting grounds, nesting areas, brooding areas, and wintering areas would be maintained in good condition. Areas in poor condition would gradually recover to a better habitat condition, depending on soil and moisture conditions.

Some livestock trespass would continue to occur. This would result in utilization of forage that might have been utilized by wildlife in meeting their needs, or as litter or soil binder to reduce soil erosion. However, because trespass would be strictly enforced, it is predicted the impact would be very low.

Watering facilities necessary for wildlife would be maintained and a few new water developments would probably be constructed where considered desirable for wildlife populations.

Livestock operators might close private lands to hunting, fishing, and other recreational pursuits by the general public should this alternative be implemented. In some areas, private lands could essentially prevent access to public lands. Restricted entry by hunters could permit a build-up in deer, elk, or antelope numbers to the degree where forage utilization by these animals could result in range deterioration and soil erosion.

In general, increased revenues from hunting would probably accrue to the state because big game populations would increase, hunting would be much better, and increased numbers of sportsmen would participate in hunting activities.

Relative impacts predicted to occur for various wildlife resources for the alternative are presented in TABLE 8-7 and estimates of changes in habitat condition for the important game species are in TABLE 8-8. Estimated percentages of habitat change are entered in TABLE 8-9.

Since livestock would be removed from the ranges, there would be no appreciable adverse impacts from livestock grazing, mitigative measures, and adverse unavoidable impacts.

Wild Horses. Some restored forage would be available for wild horses and it is very likely that greater numbers could be supported than the maximum recommended (300). However, the limiting factor for horses in the Challis Area is winter range. Therefore, even if more forage were available, the maximum number that could be supported would not likely be inordinately larger.

Wild horses would change some areas of their use. It would be expected that when competition between livestock and wild horses ceased, horses would spend greater amounts of time in the flatter, watered areas previously preferred by livestock.

Fences would no longer be required and existing ones could be removed to allow a totally free-roaming situation for the horses, except for scattered parcels of fenced state and private lands.

Wildlife populations may respond favorably to the additional forage and space that would become available, and it is probable that increased competition between wildlife and wild horses could be expected.

TABLE 8-7

RELATIVE DEGREE OF IMPACT THAT LIVESTOCK GRAZING FOR THE DISCONTINUE GRAZING ALTERNATIVE WOULD HAVE ON VARIOUS TYPES OF WILDLIFE AND THEIR HABITAT IN ALLOTMENTS IN THE CHALLIS PLANNING UNIT

Legend

1 = Low Impact [1/]
2 = Moderate Impact
3 = High Impact
- = Little or No Impact
S = Spring
F = Fall

	Competition for Forage Between Livestock and Deer		Competition for Forage Between Livestock and Elk		Competition for Forage Between Livestock and Antelope		Competition for Forage Between Livestock and Bighorn Sheep		Competition for Forage Between Livestock and Small Mammals		Livestock Use of Wet Meadows, Stream Bottoms and Riparian Vegetation		Competition for Forage/ Cover with Conifer Dwelling Wildlife		Impact of Livestock on Nests of Ground and Shrub-Nesting Birds	
	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F
Bald Mountain	3	3	1	1	1	1	-	-	2	1	3	2	2	2	1	1
Bruno Creek	2	2	-	-	-	-	-	-	1	1	1	1	2	1	1	1
Garden Creek	3	3	-	-	3	3	1	3	2	1	3	2	-	1	1	-
Herd Creek	3	3	1	1	2	2	-	-	2	2	3	3	1	2	1	-
Red Lake	2	1	-	-	3	3	-	-	3	2	3	3	1	2	1	-
Road Creek	3	3	-	-	3	2	1	2	2	1	3	2	1	1	1	-
San Felipe/Peck Canyon	2	3	-	-	2	2	-	-	2	2	3	2	-	-	1	-
Squaw Creek	1	1	-	-	-	-	-	-	1	1	2	2	-	-	1	-
Warm Springs	3	3	1	3	3	3	-	-	2	2	3	2	1	1	2	1
East Fork	2	3	-	-	2	-	2	3	2	1	3	3	1	1	1	-
Pine Creek	2	2	-	-	-	-	-	-	2	2	3	2	1	1	1	-
Round Valley	3	2	-	-	3	2	-	-	3	1	1	-	-	-	2	-
Maraffio	3	1	-	-	3	1	-	-	2	-	-	-	-	-	1	-
Woolley	3	1	-	-	3	1	-	-	2	-	-	-	-	-	1	-
Spud Creek	3	3	-	-	3	2	-	-	3	2	3	3	1	1	3	-
Sullivan Creek	3	3	-	-	-	-	-	-	3	1	3	2	-	-	1	-
Thompson Creek	1	-	1	1	-	-	-	-	1	-	2	-	-	-	1	-

[1/] 1,2,3 = Relative degree of adverse impacts.

TABLE 8-8

PRESENT CONDITION OF HABITAT FOR IMPORTANT GAME SPECIES IN THE CHALLIS PLANNING UNIT AND ESTIMATED CHANGE IN CONDITION THAT MIGHT OCCUR WITH GRAZING ALTERNATIVE 2

	Habitat Condition (Acres)					
	1975			1990		
Species	Poor	Fair	Good	Poor	Fair	Good
Deer						
Winter range	26,111	25,992	1,885	18,278	27,327	8,383
Elk						
Winter range	228	1,206	543	127	945	905
Antelope						
Yearlong	22,105	25,323	8,694	11,053	21,181	23,888
Summer	6,272	13,408	6,932	3,136	8,499	14,977
Bighorn Sheep						
Winter range	3,205	3,827	107	1,602	3,515	2,022
Sage grouse						
Brooding/ Nesting	8,516	5,679	0	2,555	7,665	3,975
Winter Habitat	0	913	2,713	0	502	3,124

TABLE 8-9

ESTIMATED PERCENTAGE OF HABITAT CHANGE THAT WOULD BE EXPECTED TO OCCUR FOR THE IMPORTANT GAME SPECIES IN THE VARIOUS ALLOTMENTS OF THE CHALLIS PLANNING UNIT WITH IMPLEMENTATION OF ALTERNATIVE 2

Wildlife Species and Habitat Type	With Proposal	Alternative 2
Deer		
Winter range		
poor to fair	20%	30%
fair to good	20%	25%
Elk		
Winter range		
poor to fair	20%	35%
fair to good	20%	30%
Antelope		
Yearlong range		
poor to fair	25%	50%
fair to good	25%	60%
Summer range		
poor to fair	25%	50%
fair to good	25%	60%
Bighorn sheep		
Winter range		
poor to fair	40%	50%
fair to good	40%	50%
Sage grouse		
Brooding/Nesting		
poor to fair	35%	70%
fair to good	35%	70%
Winter range		
poor to fair	35%	45%
fair to good	35%	45%

Aquatic Life

Aquatic habitat conditions for fish production would gradually improve on NRL. Activities on lands of other ownership at higher elevations would continue to affect water quality and fish production in streams within the unit. Occasional wildfires, unusually large concentrations of wild horses or big game along streams, and occasional livestock trespass could adversely affect fish habitat in streams throughout the unit.

The overall impact of Alternative 2 on fish habitat would be highly beneficial unitwide. Resident populations of game and nongame fish in streams flowing through NRL would increase substantially due to decreased sedimentation of streambeds, increased streambank vegetative cover for fish, increased streambank and channel stability, and lower summer water temperatures due to increased streambank vegetation. Native populations of chinook salmon and steelhead trout would probably remain at their present low levels or decrease further if downstream smolt and upstream adult migrant mortality at mainstem dams is not reduced or mitigated.

Existing habitat conditions of streams within the Challis Unit and those projected for all allotments for Alternative 2 are summarized as follows:

	Habitat Condition Classes					
	Existing Conditions (Miles)			Alternative 2 (Discontinue Grazing) (Miles)		
	Good	Fair	Poor	Good	Fair	Poor
Anadromous & Resident Fish	15.5	13.1	4.4	22.5	10.5	0
Resident Fish Only	2.0	24.5	22.2	36.3	10.4	2.0
Totals	17.5	37.6	26.6	58.8	20.9	2.0
Percent ( )	(21)	(46)	(33)	(72)	(26)	(2)

Effects of this alternative on the aquatic habitat and fish populations of Jimmy Smith and Herd Lake would be beneficial.

Agriculture

Farming. The discontinuance of livestock grazing on NRL would result in greater utilization of private lands in some livestock operations. Over the years, a pattern of use has developed on which farms and ranches are based. Cattle are fed on private lands, then early in the spring cattle and newborn calves are moved to NRL, summer on the National Forest, returned to their private lands in the fall to be fed during the winter. The availability of early spring grazing, other than NRL, is limited. Discontinuance of grazing NRL could result in cattle being held on private lands for a longer period in the spring at a time when irrigation for hay production begins. This could have an adverse effect on hay production needed for winter feeding. Supplemental feeding during the year to compensate for forage not available on NRL would also create a demand for hay that exceeds supply.

Livestock Grazing. The common cow-calf operation outlined above points out a dependence on NRL and a general shortage of spring grazing on private or state-owned lands. Discontinuance of all livestock grazing on NRL would require livestock operators to buy, lease, or develop forage to compensate for the loss of forage from NRL. Since there is a wide variation in the percentage NRL grazing represents in individual livestock operations, there would be a correspondingly wide variation in adverse impacts. Probably some individuals could or would not adjust to the change and would choose to sell or lease their ranches. Other operators would

probably cut back the size of their breeding stock until a modified year-long operation could be developed. Individual livestock operations which presently have a high percentage of NRL grazing as part of the total operation and those involving larger numbers of livestock would probably experience the greatest adverse impacts.

Private and state-owned land leased for grazing surrounded by or adjacent to NRL would probably be unavailable for grazing or would require herding until the lands could be fenced. Fencing of the lands would be required to avoid unauthorized use of NRL. (Refer to Socio-economics for this alternative.)

Unavoidable Adverse Impacts. All of the adverse impacts on farming and livestock grazing would be unavoidable.

Forest Management

Discontinuance of livestock grazing would have beneficial impacts on forest management--particularly cut-over areas and areas planned for timber harvest in the near future. Timber production would remain as is. An attempt was not made to predict increases. Adverse impacts on forest management as a result of discontinuing livestock grazing on NRL are unknown.

Visual Resources

Potential modifications to the naturalistic landscape by grazing such as the establishment of pastures or development of range improvements would not occur. However, improvements such as fences needed to keep livestock off the national resource lands could conflict with visual resource management objectives.

The movement of livestock to and from the NRL by trucking or trailing would no longer cause localized dust problems (presently very minor impact) which lower visual quality. However, where trailing permits were issued for movement of livestock to or from National Forest, state, or private lands, localized dust problems would occur.

The removal of livestock from watercourses would enable streamside vegetation to become reestablished, and trampling of streambanks, and livestock defecation in water would be eliminated. As a result, streambanks and watercourses would have improved visual qualities.

There would be no vegetative treatments to improve forage conditions for livestock resulting in modification of some landscape elements of form line, color, and texture.

All existing range improvements to facilitate livestock grazing could be removed. Sites previously occupied by these facilities could be rehabilitated but the land surface scars and vegetative removal could never be totally restored to the natural conditions that existed prior to project development. Significant costs would be encountered to rehabilitate existing visual scars and impacts.

Sites directly adjacent to stockwater ponds and water troughs that were depleted by livestock concentrations could also be rehabilitated to restore the naturalistic landscape.

The potential for soil movement under this alternative would be reduced, and there would be less visual disturbance associated with erosion than is anticipated with the proposed action. Impacts for the alternative are summarized qualitatively in TABLE 8-10.

TABLE 8-10

SUMMARY OF IMPACTS FOR ALTERNATIVE 2
AS COMPARED TO THOSE FOR THE PROPOSED SECTION

	RATINGS	
Resource	Proposed Action	Alternative 2 [1/]
Visual	-	+
Recreation	+	+++

[1/] Refer to Table 8-5 for rating criteria.

Mitigating Measures. The Bureau would utilize VRM objectives to keep boundary fences from conflicting with acceptable standards.

Existing range improvements no longer required would be removed and the sites rehabilitated.

Unavoidable Adverse Impacts. Boundary fences would remain as structures on the landscape and provide some modification to line, color, and texture.

Sites previously occupied by range improvements would represent a contrast as a result of rehabilitation efforts until naturalistic conditions were achieved.

Recreation Resources

Competition for forage between wildlife and livestock would be eliminated. As a result there would be increases in wildlife until

ecological stabilization occurred. Recreation opportunities for nonconsumptive and consumptive wildlife uses would be improved by virtue of the increased wildlife population.

A threat to public safety could occur by the build-up of heavy stands of vegetation in previously grazed areas.

Hazards to the recreation public on tourist roads would be eliminated with no trucking or trailing of livestock along these routes to and from national resource lands and between pastures.

The presence of livestock and activities associated with grazing would no longer be a public recreation attraction on national resource lands.

More springs and other waters could be available for public consumption by the removal of animal impacts to these sources.

Where livestock concentrations have caused a lowering of stream water quality, there would no longer be a threat of deterioration to progress below minimum standards for water contact recreation.

No recreation lands would be removed from use due to vegetative treatment projects.

All interior livestock fences could be removed from the national resource lands eliminating barriers to cross-country travel by horseback, hikers, and off-road vehicles.

The removal of fences and other range improvements would restore a portion of the unit to "backcountry" or possibly "primitive" conditions.

There would be no new roads built to accommodate the range program. As a result, additional public access for recreation would not become available through this activity.

Since wild horses would be managed according to the proposed plan, opportunities to view these animals would be good.

The alternative would have a beneficial effect on aquatic habitat, and result in a slight increase in fishing and fish viewing opportunities. Comparative impacts of the alternative are in TABLE 8-10.

Mitigating Measures. Existing trails and roads previously maintained by the movement of livestock or by the ranchers would be maintained by the Bureau if needed for recreational use.

Unavoidable Adverse Impacts. A threat to public safety as a result of fire potential could occur by the build-up of heavy vegetative growth in previously grazed areas.

Cultural Resources

Implementation of Alternative 2 would result in a significant decrease in adverse influences to cultural resources which were identified in TABLE 2-37, Chapter 2. Essentially, 184 cultural sites, including 37 National Register properties, and an unknown number of the estimated 750 unknown cultural properties, would no longer be disturbed by livestock grazing and related activities. Stabilized soil conditions resulting from revegetated areas would reduce adverse impacts to cultural properties (Chapter 3, General Impacts to Cultural Resources).

Some disturbance to cultural sites could occur as a result of fencing national resource lands to prevent trespass livestock grazing.

Socio-economic Conditions

Discontinuing all livestock grazing would result in a loss of 17,426 AUMs grazing use annually on NRL (FIGURE 8-2). If this loss of grazing could not be replaced with grazing on private, state, other federal lands, or supplemental feed, a reduction of livestock numbers and a corresponding decrease in income would result. Based on an analysis by methodology in Chapter 2, this loss would approximate $74,248 in annual income.

To determine the significance of this loss to the economy of Challis and Custer County, some direct comparisons can be made. The $74,248 (cumulative loss for fifteen years = $1,113,720) represents about 1.06% of the total 1970 Custer County income and about 2.1% of the total 1970 income for Challis. (17,426 AUMs X $2.85 X 1.495 = $74,247.83 and $\frac{\$74,248}{\$3,538,500}$ = 2.1% and $\frac{\$74,248}{\$7,000,000}$ = 1.06%). This loss of income ($74,298) would represent about 13% of the annual income from the livestock industry in the Challis area ($74,248 divided by $566,207 = 13.1%).

The loss of grazing on NRL would affect individual ranch operators in different ways. In some ranch operations, NRL grazing represents only about 3% of the total yearlong grazing, but represents as much as 50% elsewhere. On the average, NRL grazing represents about 16% of the total forage requirement with the balance derived from private, state, or other federal lands. There is a wide variance in the size of ranch operations. Some operators own only a few head of livestock while other operations own as many as 3,000 animals in an average year. About 16 of the 42 ranch operations in the Challis Unit involve less than 100

animals and about 6 operations average over 400 animals in an average year. The effects of a loss of NRL grazing on individual operations is dependent, in part, on the percentage that NRL contributes to an operation and the size of the operation.

The loss of approximately 13% of the livestock industry income in the Challis Unit would be significant. It is probable that some operators who could not acquire grazing to replace spring grazing on NRL would be forced to cut back the size of their operation. Some operators could possibly be forced to sell the ranch unit if loss of NRL grazing resulted in an uneconomical operation--one below the break-even point. This would increase the rate of the trend toward fewer and larger farms and ranches. Sales can only be estimated, but it is possible that no more than 10 ranches would be sold and a negative population impact would be expected. If 10 ranches were sold, direct population loss could range between 30 and 40 persons. Indirect losses in population through adjustments in other economic sectors would probably be imperceptible.

The loss of income in the livestock sector would alter the relative significance of livestock in the Challis economy while increasing the relative importance of other sectors. However, the livestock industry would still be an important segment of the economy. A discontinuance of all livestock grazing on NRL seemingly would not result in major shifts in the Challis economy.

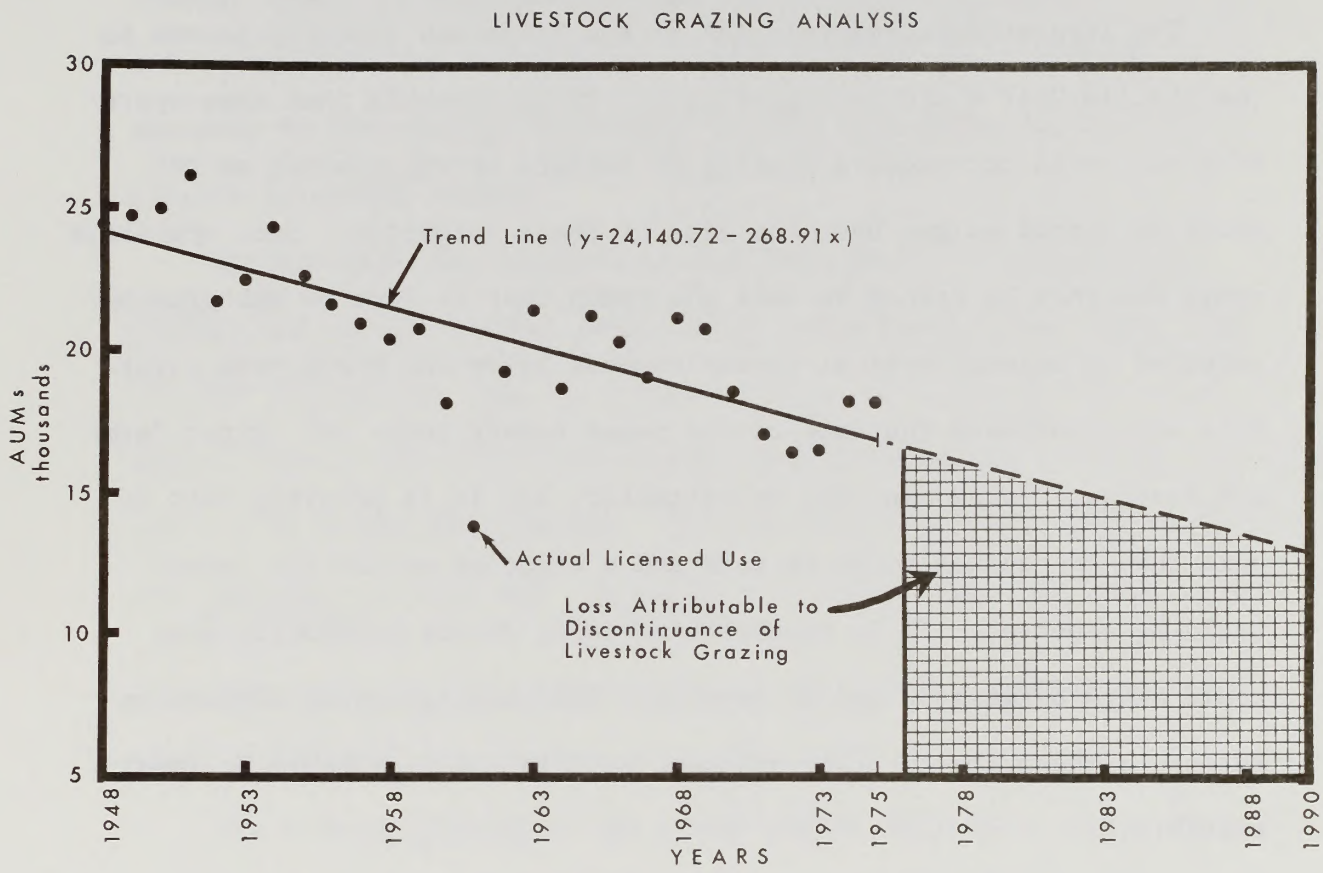


FIGURE 8-2 LIVESTOCK GRAZING ANALYSIS ALTERNATIVE NO. 2

A loss of income in the livestock sector would be accompanied by subsequent increases in the trades and services sector. Discontinuance of livestock grazing would improve wildlife habitat leading to increased numbers of game animals. Providing Idaho Fish and Game Department would permit additional harvest of game animals, the increased number of hunting days would result in increased expenditures in the Challis area. Although no estimates of hunter days have been made at this time, the increase should be considerably more than in Chapter 2. Therefore, an increase of over 146 hunter days annually would be expected. The income effect is not known but would exceed $2,632 annually.

Discontinuance of livestock grazing on NRL would create problems in using private and state lands. Intermingled private and state lands adjacent to or surrounded by NRL would have to be fenced to allow grazing use without unauthorized grazing of NRL. The amount of fencing that would be required and costs for construction have not been estimated. For each section of state-owned lands, for example, a total of four miles of fence would be required. Considering the grazing capacity of the lands, it is reasonable to assume fencing would entail a larger outlay of capital than could be recaptured from livestock grazing over a fifteen-year period.

The percentages of employment in the various economic sectors would not be altered significantly if grazing were discontinued. It is probable that some employment would be lost in the livestock sector--about ten to fifteen jobs. Some employment would increase in the trades and services sectors as a result of additional hunting and general recreation, but the extent has not been estimated.

Discontinuance of livestock grazing on NRL would tend to reduce ranch values which would yield decreased tax revenues. The loss of 17,426 AUMs represents about 1,452 animal units and a property value of about $1,452,000. The loss in tax revenue would approximate $14,230 annually ($1,452,000 x .14 x .07 = $14,229.60). Compared to 1974 data, this represents about 3% of total tax revenues for Custer County.

Discontinuance of livestock grazing on NRL would have impacts on individual and group attitudes and values. Livestock operators would probably find a large segment of Challis as well as the livestock industry in Idaho concerned with problems resulting from this alternative. Other groups would probably find this alternative acceptable since it would be in harmony with their particular attitudes and values.

Unavoidable Adverse Impacts. All adverse impacts addressed are considered to be unavoidable.

IMPLEMENT AMPs ON NINE ALLOTMENTS AND LIVESTOCK ENTRY UNTIL FLOWERING TIME OF KEY LIVESTOCK FORAGE SPECIES ON SEVEN ALLOTMENTS. (ALTERNATIVE 3)

Description

This alternative would involve implementation of proposed AMPs on Bald Mountain (MAP 8-1), Bruno Creek, Garden Creek, Herd Creek, Red Lake, Road Creek, San Felipe/Peck Canyon, Squaw Creek, and Warm Springs Allotments (TABLE 8-11). These allotments were selected by use of three criteria: (1) economically feasible, (2) less than 50% of the allotment is critical wildlife habitat, or (3) less than 50% of the allotment producing more than 201 tons of sediment annually per square mile.

The East Fork, Pine Creek, Round Valley, Spud Creek, Sullivan Creek, Thompson Creek and Split Hoof Allotments do not meet the above criteria for AMP implementation. Under this alternative, initiation of grazing would coincide with flowering time (on or about June 15) of the key livestock forage species on these allotments. Also, for some allotments in this group there would be a modification of AUMs as compared to the proposed action (TABLE 8-11). Many permittees now use these areas from 5/1-6/15 and then move their animals to Forest Service or National Recreation areas. Range improvements would be restricted to those authorized by BLM Section 4 permits or cooperative agreements.

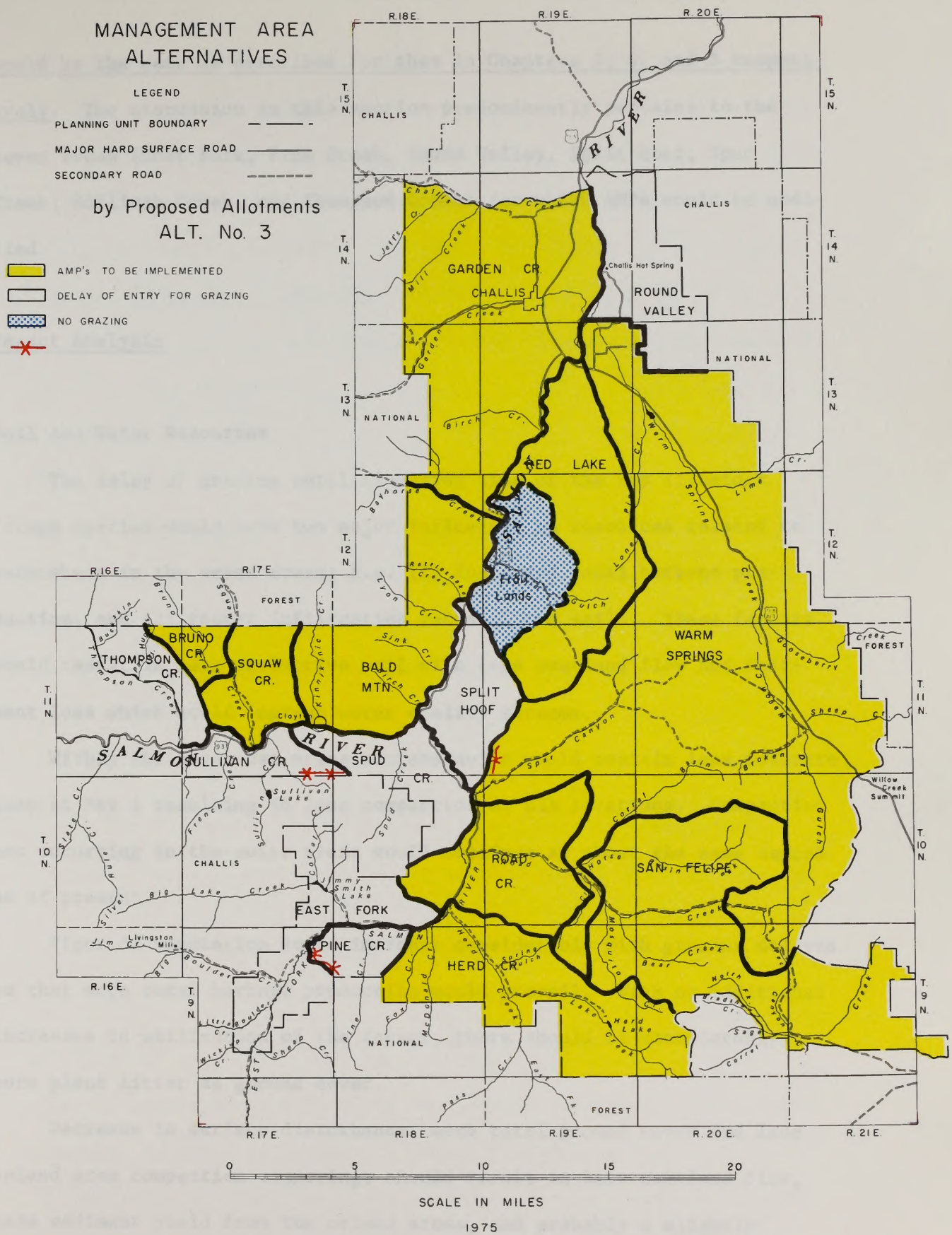
Impacts, mitigating measures and unavoidable adverse impacts for all resources or components in Bald Mountain, Bruno Creek, Garden Creek, Herd Creek, Red Lake, Road Creek, San Felipe/Peck Canyon, Squaw Creek, and Warm Springs Allotments where proposed AMPs would be implemented,

TABLE 8-11

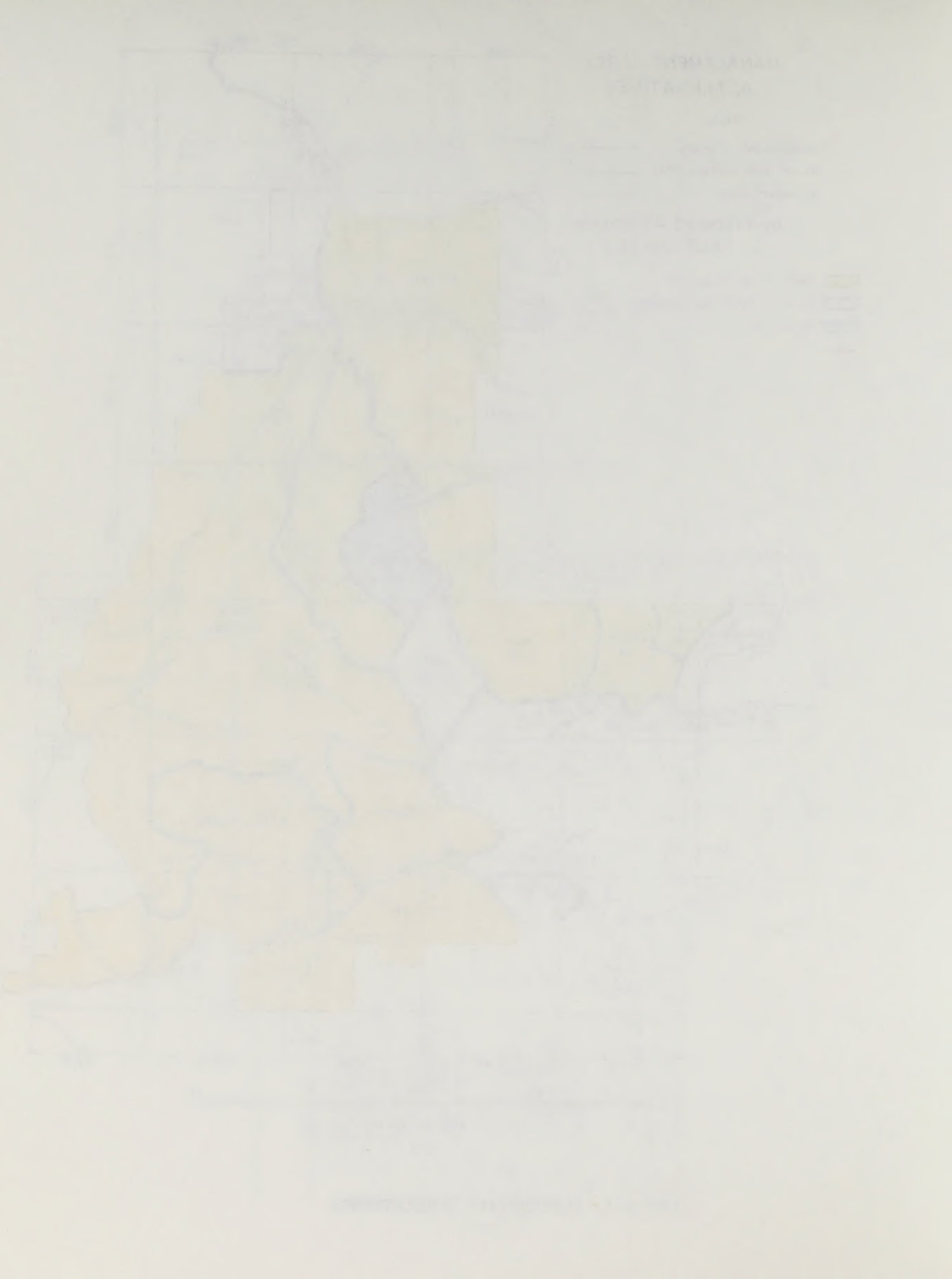
DOMESTIC LIVESTOCK AUM USE FOR ALTERNATIVE THREE AND NET AUM USE CHANGE AS COMPARED TO THE PRESENT

	Allotment	Acres	6 Year Average AUM Use	AUM Use as Proposed In AMPs	AUM Modifications Spring 6/16-8/31	AUM Modifications Fall 10/1-10/15	Total Livestock AUM Use For Alternative	Net AUM Use Change From Present
AMPs Implemented	1. Bald Mountain	24,761	617	660	0	0	660	+ 43
	2. Bruno Creek	2,453	125	67	0	0	67	- 58
	3. Garden Creek	31,638	930	907	0	0	907	- 23
	4. Herd Creek	24,688	1,222	1,035	0	0	1,035	- 187
	5. Red Lake	25,332	1,092	1,395	0	0	1,395	+ 303
	6. Road Creek	16,074	582	614	0	0	614	+ 32
	7. San Felipe/Peck Canyon	41,335	3,287	3,387	0	0	3,387	+ 100
	8. Squaw Creek	8,820	468	364	0	0	364	- 104
	9. Warm Springs	109,141	7,382	9,580	0	0	9,580	+2,198
Deferred Grazing	10. East Fork	15,000	503		359	144	503	0
	11. Pine Creek	4,294	181		110	71	181	0
	12. Round Valley	13,583	373		373	0	373	0
	13. Spud Creek	9,426	250		200 1/	0	200	- 50
	14. Sullivan Creek	4,945	88		73	15	88	0
	15. Thompson Creek	5,835	140		9	0	9	- 131
	16. Split Hoof	9,655	186		186	0	186	0
	Totals	346,980	17,426	18,009	1,310	230	19,549	+2,123

1/ Use date 6/16-9/15



MAP 8-1 ALTERNATIVE 3 ALLOTMENTS



would be the same as described for them in Chapters 3, 4, and 5 respectively. The discussion in this section predominantly pertains to the seven areas (East Fork, Pine Creek, Round Valley, Split Hoof, Spud Creek, Sullivan Creek, and Thompson Creek) for which AMPs would be modified.

Impact Analysis

Soil and Water Resources

The delay of grazing until flowering time of the key livestock forage species would have two major influences on resources related to watersheds in the seven areas; i.e. (1) increased total herbage production, and (2) faster infiltration rates of the soils. These factors would result in more productive soil with less overland flow and sediment loss which would improve water quality streams.

Within the seven use areas surface soils would contain less moisture than at May 1 resulting in less compaction at all locations. Compaction now occurring in the moist areas would continue at about the same degree as at present.

Vigor of vegetation would increase considerably with grazing delayed so that more total herbage production would prevail. With no additional increases in utilization of the forage, there should be considerably more plant litter as ground cover.

Decrease in surface disturbance, more total ground cover and less upland area compaction occurring, should result in less overland flow, less sediment yield from the upland areas, and probably a slightly better water quality originating from the seven use areas. The

exception to this could be from the Split Hoof area as caused by the wild horse herd. If horse use does not increase in this area in the early spring, then the results would be as stated above. If horse use substantially increases prior to livestock entry, overland flow and sediment yield would not be expected to change significantly.

As a result of this alternative, sediment yield, predicted to originate from the entire unit is as follows:

Soil Association	Present Yield Tons/Year	Yield With Alternative #3 Tons/Year	Difference
A	15,500	13,562	- 1,938
B	2,908	2,617	- 291
C	33,031	28,756	- 4,275
D	173,640	149,620	-24,020
E	1,384	1,176	- 208
Total	226,463	195,731	-30,732

Unavoidable Adverse Impacts. Loss of 46,347 tons of sediment from the unit per year (after fifteen years) in excess of natural geologic losses.

Vegetation

Adverse impacts attributed to livestock grazing as described in Chapter 3 for the seven areas would be avoided by deferring use to June 15. Desirable plants for livestock grazing would store approximately 50% of their root reserves, produce seed, and increase seedling

establishment. This would increase the number of new young plants of desirable species for livestock use and result in an increase in vigor of the existing desirable plants contributing to more volume of forage produced, and increased litter accumulation. Grazing later in the spring would result in less soil compaction and associated plant damage. Undesirable or less desirable plants not normally grazed by livestock under present practices would either maintain themselves or improve slightly in vigor depending upon the amount of use now being made during the early spring period.

The percent of production potential that would be attained in fifteen years as a result of management is listed for each of the seven allotments in TABLE 8-12. An additional 15,879 AUMs would be produced for the unit after fifteen years representing an increase of approximately 53% as compared to present conditions. Net differences in AUMs for five and fifteen years would be 2,151 and 12,888 respectively. Allotments which would have less forage after use of allocated and proposed AUMs than at present would be Bruno Creek and Warm Springs (TABLE 8-13).

Identified ET plant locations are all, with the exception of Malm Gulch site, within allotments that would be intensively managed under this alternative. The impact of implementing improved management under this alternative would be the same as for the proposal and would be mitigated 100%.

On those areas where grazing is deferred until flowering time it is assumed that ET plant species would benefit from this action just as

TABLE 8-12

RATINGS FOR ESTIMATING AUM PRODUCTION FOR ALTERNATIVE 3

Rating Scale

B+ = 9
B = 6
B- = 3
N = 0
A- = -3
A = -6
A+ = -9

A = Adverse
B = Beneficial
N = No Change

	CARBOHYDRATE RESERVES AND PLANT VIGOR		SEED PRODUCED		SEED SHATTERING AND TRAMPLING		SEEDLING ESTABLISHMENT		LITTER ACCUMULATION Soil Fertility/Plant Growth		CONCENTRATING LIVESTOCK Plants Affected		SOIL COMPACTION Plant Growth		TOTAL NUMERICAL RATING = % Production 1/ Potential Realized	Difference in Present and Potential AUMs Production	Estimated Additional AUMs that Would be Produced in 15 Yrs.
	Palatable	Unpalatable	Palatable	Unpalatable	Palatable	Unpalatable	Palatable	Unpalatable	Palatable	Unpalatable	Palatable	Unpalatable	Palatable	Unpalatable			
East Fork Allotment	B	B-	B	B-	B	B-	B+	B-	B	B-	N	N	B	B	60	928	557
Pine Creek	B	B-	B	B-	B	B-	B+	B-	B	B-	N	N	B	B	60	558	335
Round Valley	B	B-	B	B-	B	B-	B+	B-	B	B-	N	N	B	B	60	1,895	1,137
Split Hoof	B	B-	B	B-	B	B-	B+	B-	B	B-	N	N	B	B	60	822	493
Spud Creek	B	B-	B	B-	B	B-	B+	B-	B	B-	N	N	B	B	60	782	469
Sullivan Creek	B	B-	B	B-	B	B-	B+	B-	B	B-	N	N	B	B	60	526	316
Thompson Creek	B	B-	B	B-	B	B-	B+	B-	B	B-	N	N	B	B	60	230	138
																5,741	3,445

1/ Summation of plants palatable and unpalatable for livestock use. Refer to TABLE 3-5 for methodology.

TABLE 8-13

PREDICTED AUM PRODUCTION FOR ALTERNATIVE 3, TOTAL AUM USE PROPOSED AND COMMITTED, AND NET AUM IDFFERENCE AFTER 5 AND 15 YEARS
AUM PRODUCTION FOR THE SIXTEEN ALLOTMENTS UNDER THE PROPOSAL

		Present Production	Additional Production After 15 Years to be Achieved by Management	Total Production After 15 Years	Total AUMs 1/ Proposed & Committed	Net AUM Difference After 5 Years	Net AUM Difference After 15 Years
IMPLEMENT AMPs	1. Bald Mountain	1,084	1,384	2,468	1,237	206	1,231
	2. Bruno Creek	8	29	37	182	- 24	- 145
	3. Garden Creek	2,287	2,509	4,796	1,604	533	3,192
	4. Herd Creek	1,848	1,934	3,782	1,497	382	2,285
	5. Red Lake	1,006	2,132	3,138	2,959	30	179
	6. Road Creek	1,004	720	1,724	1,411	52	313
	7. San Felipe/Peck Canyon	5,316	3,298	8,614	5,416	534	3,198
	8. Squaw Creek	573	434	1,007	597	68	410
	9. Warm Springs	11,369	- 6	11,363	14,212	- 476	-2,849
	Subtotal	24,495	12,434	36,929	29,115	1,305	7,814
MODIFIED AMPs	10. East Fork	1,925	557	2,482	1,092	232	1,390
	11. Pine Creek	447	335	782	325	76	457
	12. Round Valley	1,403	1,137	2,540	654	315	1,886
	13. Split Hoof	733	493	1,226	596	105	630
	14. Spud Creek	523	469	992	648	57	344
	15. Sullivan Creek	122	316	438	174	44	264
	16. Thompson Creek	196	138	334	231	17	103
	Subtotal	5,349	3,445	8,794	3,720	846	5,074
	Total	29,844	15,879	45,723	32,835	2,531	12,888

1/ It was assumed that wildlife and wild horse AUMs would remain constant for this alternative and other alternatives.

any other plants would. No adverse impact on ET plant species is expected should this alternative be implemented.

Terrestrial Animals

Deferment of livestock grazing until flowering time on the seven allotments (East Fork, Pine Creek, Round Valley, Spud Creek, Sullivan Creek, Thompson Creek, and Split Hoof) would provide the following advantages to wildlife: (1) less disturbance and/or destruction of nests of ground or shrub-nesting birds, (2) less competition for forage in spring with big game animals, (3) less disturbance or competition with antelope and deer at fawning time, (4) less utilization by livestock of wet meadows and stream bottoms that are important to many wildlife species, and (5) less competition with small wildlife species for forage and less removal of cover for wildlife. All impacts resulting from Treatment A as discussed in Chapter 3 would be reduced about 5 to 30%.

In allotments receiving deferred livestock grazing, deer and antelope would have the opportunity to produce their young with no competition for forage or disturbance from livestock until about June 15 each year. Sage and blue grouse could hatch their young and obtain the use of brooding areas, such as wet meadows and stream bottoms, prior to the arrival of livestock. Small animals and birds could complete many of their reproductive processes and rearing of their young by the time cattle were turned into the allotments. The amount of benefit would

depend on many factors, including: (1) present condition, type, and composition of the vegetation in the allotment, (2) accessibility of the respective species habitat to livestock, (3) amount of preferred habitat for the particular species in the allotment, and (4) numbers of wildlife depending on their habitat areas for survival. All these factors vary considerably from pasture to pasture.

This alternative would be especially beneficial to deer during the spring in the East Fork, Pine Valley, Split Hoof (Maraffio and Woolley), and Sullivan Creek Allotments, and to antelope in the East Fork, Round Valley, Split Hoof (Maraffio and Woolley), and Spud Creek Allotments, and to bighorn sheep in the East Fork Allotment.

Predicted changes in habitat condition for all allotments for the important game species under this alternative are in TABLE 8-14, and estimates of the degree of impact that the alternative would have on wildlife and their habitat are in TABLE 8-15. Predicted habitat changes expressed in percentage are in TABLE 8-16.

Wild Horses. For the alternative, proposed AMPs would be implemented on all but one allotment (Split Hoof) in the wild horse area. The allotment would have deferred grazing to flowering time of key livestock management species, and a decrease in livestock AUMs.

TABLE 8-14

PRESENT CONDITION OF HABITAT FOR IMPORTANT GAME SPECIES IN THE CHALLIS PLANNING UNIT AND ESTIMATED CHANGES IN CONDITION FOR ALTERNATIVE 3

Species	Habitat Condition (Acres)					
	1975			1990		
	Poor	Fair	Good	Poor	Fair	Good
Deer						
Winter range	26,111	25,992	1,885	20,889	26,016	7,083
Elk						
Winter range	228	1,206	543	182	784	1,011
Antelope						
Yearlong	22,105	25,323	8,694	15,473	24,358	16,291
Summer	6,272	13,408	6,932	4,391	11,267	10,954
Bighorn sheep						
Winter range	3,205	3,827	107	1,763	3,547	1,829
Sage grouse						
Brooding/ Nesting	8,516	5,679	0	5,110	6,813	2,272
Winter Habitat	0	913	2,713	0	593	3,033

TABLE 8-15

RELATIVE DEGREE OF IMPACT THAT LIVESTOCK GRAZING WOULD HAVE ON VARIOUS TYPES OF WILDLIFE AND THEIR HABITAT IN ALLOTMENTS IN THE CHALLIS PLANNING UNIT FOR ALTERNATIVE 3

Legend

1 = Low Impact
2 = Moderate Impact
3 = High Impact
- = Little or No Impact
S = Spring
F = Fall

	Competition for Forage Between Livestock and Deer		Competition for Forage Between Livestock and Elk		Competition for Forage Between Livestock and Antelope		Competition for Forage Between Livestock and Bighorn Sheep		Competition for Forage Between Livestock and Small Mammals		Livestock Use of Wet Meadows, Stream Bootoms and Riparian Vegetation		Competition for Forage/ Cover with Conifer Dwelling Wildlife		Impact of Livestock on Nests of Ground and Shrub-Nesting Birds	
	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F
Bald Mountain	2	2	1	1	1	1	-	-	1	1	2	2	2	2	1	1
Bruno Creek	2	2	-	-	-	-	-	-	1	1	1	1	2	1	1	1
Garden Creek	3	3	-	-	3	3	1	3	2	1	3	3	1	1	2	1
Herd Creek	3	3	1	1	2	2	-	-	1	1	2	2	1	1	1	-
Red Lake	1	1	-	-	2	2	-	-	2	1	2	2	1	1	1	-
Road Creek	2	2	-	-	2	1	1	3	2	1	3	2	1	1	1	-
San Felipe/Peck Canyon	2	3	-	-	2	2	-	-	1	1	2	2	-	-	1	-
Squaw Creek	1	1	-	-	-	-	-	-	1	1	2	2	-	-	1	-
Warm Springs	3	3	2	3	3	3	-	-	2	2	3	2	1	1	2	1
East Fork	-	3	-	-	2	2	-	3	1	1	3	3	1	1	1	-
Pine Creek	1	2	-	-	-	-	-	-	1	-	3	3	1	1	1	-
Round Valley	-	-	-	-	2	2	-	-	1	-	-	-	-	-	1	-
Split Hoof																
Maraffio	-	2	-	-	1	1	-	-	1	-	-	-	-	-	-	-
Woolley	-	2	-	-	1	1	-	-	1	-	-	-	-	-	-	-
Spud Creek	1	2	-	-	2	2	-	-	1	-	3	3	1	-	1	-
Sullivan Creek	1	2	-	-	-	-	-	-	1	-	1	1	-	-	1	-
Thompson Creek	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-

1/ 1,2,3 refer to relative adverse impacts.

TABLE 8-16

ESTIMATED PRECENTAGE OF HABITAT CHANGE PREDICTED FOR IMPORTANT GAME SPECIES IN THE CHALLIS PLANNING UNIT FOR ALTERNATIVE 3

Wildlife Species and Habitat Type	With Proposal	Alternative 3 1/
Deer		
Winter range		
poor to fair	20%	22%
fair to good	20%	22%
Elk		
Winter range		
poor to fair	20%	22%
fair to good	20%	22%
Antelope		
Yearlong range		
poor to fair	25%	35%
fair to good	25%	35%
Summer range		
poor to fair	25%	35%
fair to good	25%	35%
Bighorn sheep		
Winter range		
poor to fair	40%	47%
fair to good	40%	47%
Sage grouse		
Brooding/Nesting		
poor to fair	35%	45%
fair to good	35%	45%
Winter range		
poor to fair	35%	35%
fair to good	35%	35%

1/ Predictions are for the entire unit.

Impacts from this alternative would be mostly beneficial to wild horses. They would have access to forage during the deferment period; also, more AUMs would be available due to the decrease in livestock numbers.

Mitigation. Livestock would be excluded from crucial bighorn winter range in the East Fork Allotment which would reduce the impact on bighorns by about 90%.

Unavoidable Adverse Impacts. Refer to Chapter 5 for unavoidable impacts for the seven allotments.

Aquatic Life

Habitat conditions in the seven deferred grazing areas would be predicted to improve only in Thompson Creek (7.5 miles) and Spud Creek (1.2 miles) which would possibly contribute to increases in fish populations. Improvement in habitat condition is not predicted in other streams in the deferred use areas due to a combination of proposed use (AUMs) and extended grazing periods. Benefits are expected to accrue to vegetation and soil condition on upland areas by deferring livestock use (refer to Soil and Water Resources and Vegetation Sections). Corresponding improvement in streambank vegetation and aquatic habitat is not expected because livestock would concentrate along streams during the warmest months for longer periods of time than at present. Overall for the

alternative (all 16 allotments) habitat conditions would improve in approximately 13.9 miles of streams. Little change in the habitat condition of Jimmy Smith Lake is expected. Miles of condition classes for habitat for anadromous and resident fish which would result are as follows:

Habitat Condition Classes

	Existing Conditions (miles)			Alternative 3 (miles)		
	Good	Fair	Poor	Good	Fair	Poor
Anadromous & Resident Fish	15.5	13.1	4.4	15.5	16.1	1.4
Resident Fish Only	2.0	24.5	22.2	10.5	18.4	19.8
Totals	17.5	37.6	26.6	26.0	34.5	21.2
Percent ( )	(21)	(46)	(33)	(32)	(42)	(26)

Unavoidable Adverse Impacts. Refer to Chapter 5 for impacts which would not be avoided.

Agriculture

Farming. The deferred grazing in seven allotments until about June 15 would require the operators grazing these areas to hold cattle and calves on private lands longer in the spring, or acquire additional spring grazing. Holding cattle on private lands used for hay production at a time when irrigation should be initiated could result in lower crop yields. Reduced yields have not been estimated nor quantified, but would be an adverse impact on farming.

Livestock Grazing. Livestock grazing in accordance with the 9 AMPs would entail an increase of 2,304 AUMs over present grazing use--a beneficial impact. Four allotments involving seventeen operators would include a decrease of 372 AUMs grazing use. This decrease is considered an adverse impact, but is partially offset by the increase of more palatable and nutritious forage for livestock which would eventually be available. The proposed management on the nine allotments is identical to the proposed action and impacts have been discussed in Chapter 3.

Deferred grazing in the seven allotments would result in the same levels of grazing use as the six-year average in five of the allotments. A decrease of 50 AUMs in the Spud Creek Allotment and 131 AUMs in the Thompson Creek Allotment would affect four operators. Deferring use of these seven allotments each year would require the seventeen operators involved to acquire or develop spring grazing for their livestock. Since spring grazing other than on NRL is limited in the unit, this would represent an adverse impact. Early spring grazing generally results in relatively high weight gains per day. Deferring livestock grazing until about June 15 would result in grazing less palatable and nutritious forage, and if quality forage was not available in the interim, weight gains could be less than what normally occurs with early spring grazing on NRL. Similarly, fall grazing of NRL in three allotments would involve livestock grazing less palatable forage species. There is a correlation in stages of maturation of grass species with palatability and weight gains in cattle. As grasses begin growth and start to flower, cattle weight gains increase. As grasses mature, ripen seed, and cure,

weight gains per day in cattle decrease. Adverse impacts associated with operators having to acquire spring grazing and possible decreased weight gains have not been quantified but are considered adverse impacts.

Visual Resources

A probable beneficial impact of this alternative in the seven allotments is that a visual contrast between Treatment A and Treatment C pastures would not occur. Because of a lower overall potential for soil movement and sedimentation in these areas less landscape disturbances would be likely. Refer to TABLE 8-17 for a summary of impacts for visual resources for the alternative.

TABLE 8-17

SUMMARY OF IMPACTS FOR ALTERNATIVE 3

Resource	Proposed Action	Alternative 3
Visual	- 1/	-
Recreation	+	+

1/ Refer to TABLE 8-5 for rating criteria.

Recreation Resources

There would be some effects on aquatic habitat from the alternative, and opportunities to fish or observe fish would improve.

A moderately beneficial effect to terrestrial wildlife habitat is predicted for the seven allotments where livestock grazing would be deferred. As a result, opportunities to hunt and view wildlife would also improve.

Since wild horses would be managed according to the proposed plan, opportunities to view these animals would be good. In TABLE 8-17 semiquantitative ratings of impacts of the alternative (sixteen allotments) are listed. Essentially, effects of implementation of the alternative would be similar to those of the proposed action.

Mitigation. The same mitigating measures discussed in Chapter 4 for recreation would be applied regardless of the timing for implementing the AMPs.

Unavoidable Adverse Impacts. Impacts addressed in Chapter 5 for recreation would be the same as for this alternative.

Cultural Resources

Impacts to cultural sites for the alternative would be the same as stated for the proposed action (see Chapter 3, General Impacts to Cultural Resources).

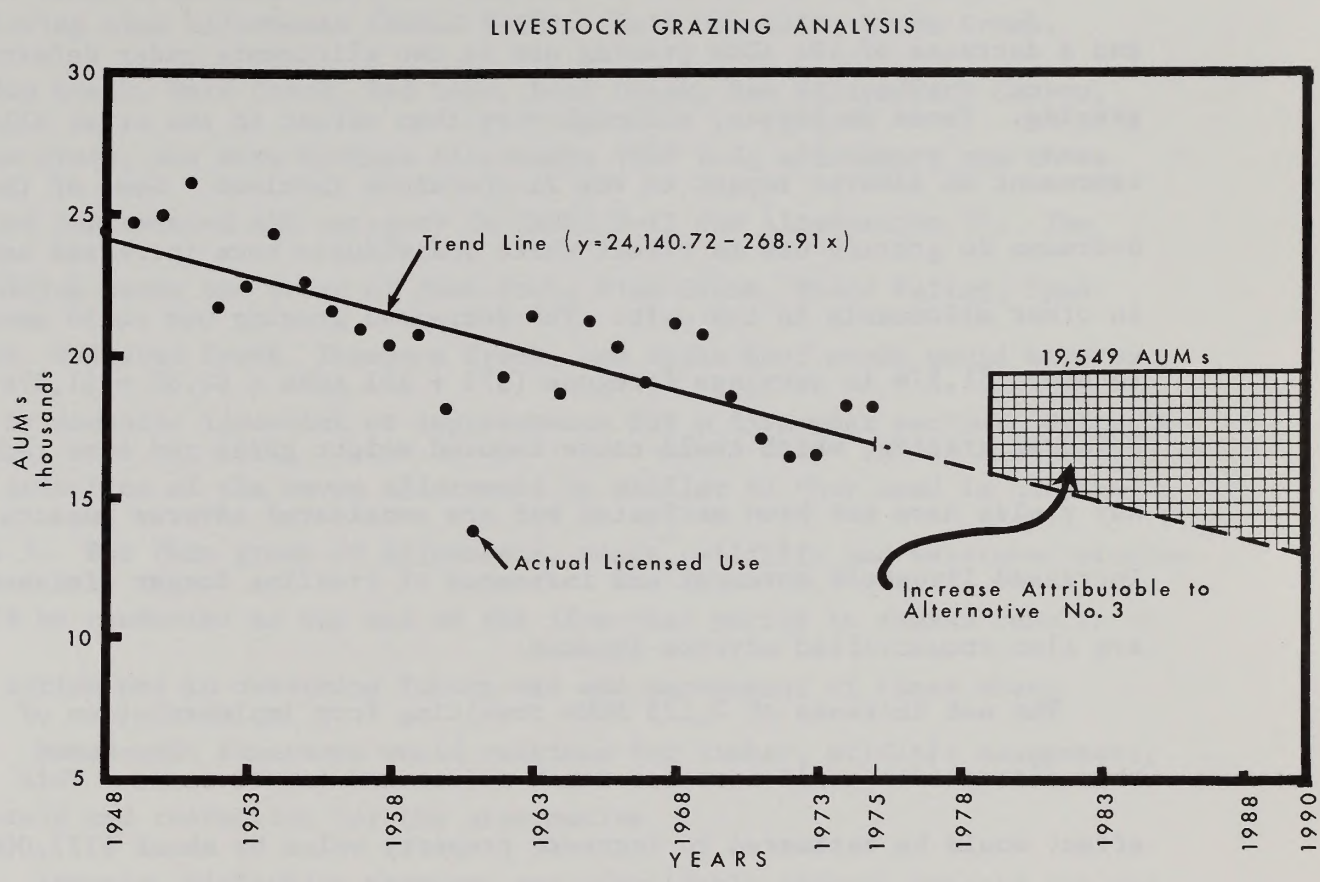
Mitigation. The 37 National Register eligible cultural properties susceptible to damage would be protected by appropriate physical measures and/or 106/2(b) statement recommendation (assuming they are followed).

Mitigation of adverse impacts to the remaining 140 known National Register ineligible cultural properties and to an unknown number of the estimated 750 unknown cultural properties would be the same as outlined in Chapter 4 (Cultural Resource Mitigation).

Unavoidable Adverse Impacts. Unavoidable adverse impacts to cultural properties as the result of livestock grazing would be the same as discussed in Chapter 5. Damage and destruction would continue to occur to 140 known and an unknown number of the estimated 750 unknown cultural properties for three years until the proposed cultural resource management activity plan outlined in Chapter 4 (Cultural Resource Mitigation) could be completed.

Socio-economics

The effect of implementing AMPs on nine allotments as in the proposed action and deferred livestock grazing on seven allotments would be a net increase of 2,123 AUMs (FIGURE 8-3). The income effect of this increase was estimated by techniques developed for Chapters 2 and 3. The increases are predicted to contribute approximately $9,046 annually to the Challis economy, or about $135,690 for a fifteen-year period based on 1970 data (2,123 AUMs x $2.85 x 1.495 = $9,045.57/annum). Habitat improvements for big game and upland birds would be expected to promote an increase in hunter days with an increase of income in the trades and services sectors of the Challis economy. This increase



URE 8-3 LIVESTOCK GRAZING ANALYSIS ALTERNATIVE NO. 3

would be similar to that described for the proposed action in Chapter 3. Both the livestock and hunting income are considered to be beneficial impacts.

There would be a decrease of 372 AUMs in four allotments under AMPs and a decrease of 181 AUMs grazing use in two allotments under deferred grazing. These decreases, although more than offset in the other allotments, represent an adverse impact to the 21 operators involved. Some of the decrease in grazing use is offset where individuals have increased use in other allotments in the unit. The decreased grazing use could amount to about $1,576 in earnings foregone (372 + 181 AUMs x $2.85 = $1,576.05). Deferred grazing, which could cause reduced weight gains and some reduced hay yields have not been estimated but are considered adverse impacts. Increased livestock movement and instances of trailing longer distances are also unquantified adverse impacts.

The net increase of 2,123 AUMs resulting from implementation of this alternative could increase ranch values and tax revenues. This effect would be estimated to increase property value by about $177,000 with an increase of taxes by about $1,735 annually, or approximately $26,025 for the fifteen-year period.

AMPs IMPLEMENTED VS. TOTAL SUSPENDED NON-USE ON SELECTED ALLOTMENTS FOR FIVE YEARS (ALTERNATIVE 4)

Description

This alternative would involve implementing proposed AMPs on the following nine allotments (TABLE 8-18): Bald Mountain, Bruno Creek, Garden Creek, Herd Creek, Red Lake, Road Creek, San Felipe/Peck Canyon, Squaw Creek, and Warm Springs Allotments (MAP 8-2, allotments are those in the Implemented AMP category in TABLE 8-11 for Alternative 3). The remaining seven use areas of East Fork, Pine Creek, Round Valley, Spud Creek, Sullivan Creek, Thompson Creek, and Split Hoof areas would have no use by domestic livestock or improvements for a five-year period. Criteria for selection of the seven allotments is similar to that used in Alternative 3. For this group of allotments, range, wildlife and watershed studies would be conducted at the end of the five-year period to assess results of the action and to determine future use and management of these areas.

Management functions would continue for timber, wildlife management, minerals and recreation for the alternative.

Impacts, mitigative measures and unavoidable adverse impacts for the nine allotments for which AMPs would be implemented would be the same as discussed for them in Chapters 3, 4 and 5 respectively.

Impact Analysis

Livestock would not have access to the seven non-use areas and adverse impacts to resources and components other than agricultural and socio-economic would be avoided.

TABLE 8-18

PREDICTED AUM PRODUCTION ATTRIBUTED TO MANAGEMENT, PROPOSED AND COMMITTED AUM USE, AND NET AUM DIFFERENCE AFTER IMPLEMENTATION OF ALTERNATIVE 4

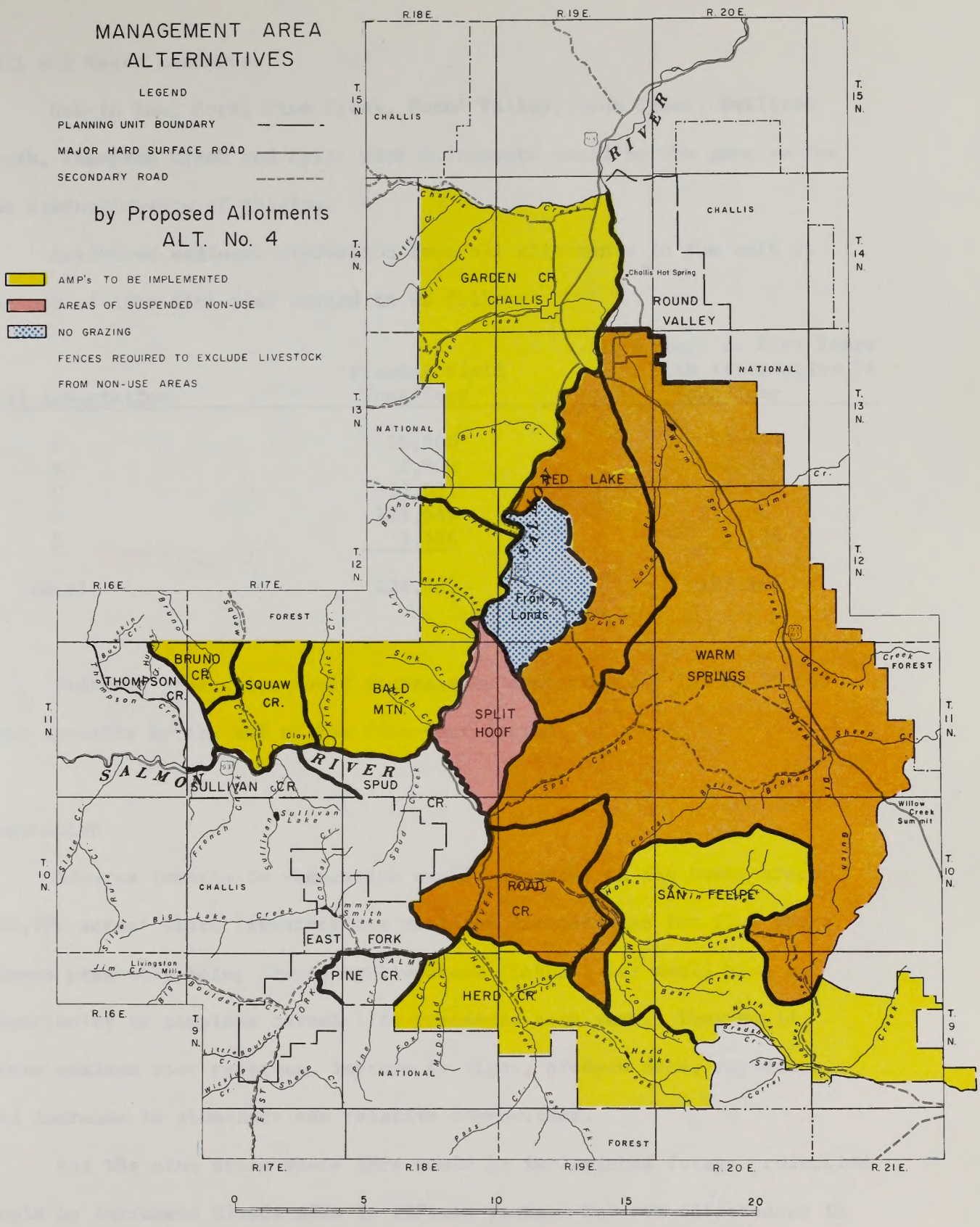
		Present Production	Additional Production After 15 Years to be Achieved by Management	Total Production After 15 Years	Total AUMs 1/ Proposed & Committed	Net AUM Difference After 5 Years	Net AUM Difference After 15 Years
IMPLEMENT AMPs	Bald Mountain	1,084	1,384	2,468	1,237	206	1,231
	Bruno Creek	8	29	37	182	- 24	- 145
	Garden Creek	2,287	2,509	4,796	1,604	533	3,192
	Herd Creek	1,848	1,934	3,782	1,497	382	2,285
	Red Lake	1,006	2,132	3,138	2,959	30	179
	Road Creek	1,004	720	1,724	1,411	52	313
	San Felipe/Peck Canyon	5,316	3,298	8,614	5,416	534	3,189
	Squaw Creek	573	434	1,007	597	68	410
	Warm Springs	11,369	- 6	11,363	14,212	- 476	- 2,849
	SUBTOTAL	24,495	12,434	36,929	29,115	1,305	7,814
DOMESTIC LIVESTOCK USE DISCONTINUED FOR 5 YEARS	East Fork	1,925	186	2,111	589 2/	1,522	9,114 3/
	Pine Creek	447	112	559	144	415	2,485
	Round Valley	1,403	379	1,782	281	1,501	8,988
	Split Hoof	733	164	897	815	82	491
	Spud Creek	523	156	679	448	231	1,383
	Sullivan Creek	122	105	227	86	141	844
	Thompson Creek	196	46	242	222	20	120
	SUBTOTAL	5,349	1,148	6,497 1/	2,585	3,912	23,425
	TOTAL	29,844	13,582	43,424	31,700	5,217	31,239

1/ Includes livestock, wildlife and wild horses.

2/ For wildlife and wild horses only.

3/ For comparative purposes extrapolation was done to derive estimates for differences after 15 years.

NINE AMPs VS. SUSPENDED NON-USE ON 7 AREAS



MAP 8-2 ALTERNATIVE 4 ALLOTMENTS

Soil and Water Resources

Use in East Fork, Pine Creek, Round Valley, Spud Creek, Sullivan Creek, Thompson Creek and Split Hoof Allotments would be the same as for the discontinuance of grazing.

Estimated sediment production from all allotments in the unit at the end of this five-year period is as follows:

Soil Association	Present Yield Tons/Year	Yield in Five Years With Alternative #4 Tons/Year
A	15,500	13,640
B	2,908	2,545
C	33,031	28,756
D	173,640	151,067
E	1,384	1,176
Total	226,463	197,184

Sediment production would decrease by approximately 13% or 29,000 tons annually by the end of the five-year period.

Vegetation

Adverse impacts to vegetation would not occur in the seven areas (62,700 acres) where livestock use would be discontinued for five years. Plants presently being grazed by livestock (TABLE 2-14) would have an opportunity to complete normal life processes each year. They would store maximum root reserves, improve in vigor, produce seed, reproduce and increase in abundance and relative composition.

For the nine areas where AMPs would be implemented forage production would be increased 12,434 AUMs in fifteen years. Net AUM differences in five and fifteen years would be +1,305 and +7,814 respectively. There

would be less forage in Warm Springs and in Bruno Creek than at present (TABLE 8-18). Where livestock use would be curtailed for five years the net difference of AUMs for five years would be +3,912. If the seven allotments were not to be grazed by livestock, after fifteen years the net difference for the sixteen areas would be 31,239 AUMs. The percent of production potential which would be achieved for each of the seven non-use allotments is indicated in TABLE 8-19.

For endangered or threatened plants, monitoring measures as recommended in TABLE 4-3 would be implemented and adverse impacts which would be threatening would be avoided.

Terrestrial Animals

Impacts that would occur with this alternative would be the same as those described for the proposal for the first nine allotments where AMPs would be implemented, but there would be no impacts from livestock grazing for the remaining seven allotments for at least a five-year period.

Cessation of grazing in the seven allotments (East Fork, Pine Creek, Round Valley, Spud Creek, Sullivan Creek, Thompson Creek, and Split Hoof (Maraffio and Woolley)) would provide the following benefits to wildlife for at least five years: (1) an opportunity for forage and cover for all wildlife species to become more abundant, (2) probably greater survival of many small species of wildlife, such as ground-nesting birds, from lack of nest trampling or disturbance from livestock, and from greater cover for eluding detection from predators, (3) lack of interspecific competition for winter forage for big game animals, and (4) exclusive use of wet meadows and stream bottoms by wildlife.

TABLE 8-19

RATINGS FOR DETERMINING AUM PRODUCTION FOR ALTERNATIVE 4

Rating Scale B+ = 9 B = 6 B- = 3 N = 0 A- = -3 A = -6 A+ = -9 A = Adverse B = Beneficial N = No change	CARBOHYDRATE RESERVES AND PLANT VIGOR		SEED PRODUCED		SEED SHATTERING AND TRAMPLING		SEEDLING ESTABLISHMENT		LITTER ACCUMULATION Soil Fertility/Plant Growth		CONCENTRATING LIVESTOCK Plants Affected		SOIL COMPACTION Plant Growth		TOTAL NUMERICAL RATING = % Production Potential Realized 1/	Difference in Present Production and Potential AUMs	Additional AUMs that Would Be Produced in 5 Years	Additional AUMs that Would Be Produced in 15 Years
	Palatable	Unpalatable	Palatable	Unpalatable	Palatable	Unpalatable	Palatable	Unpalatable	Palatable	Unpalatable	Palatable	Unpalatable	Palatable	Unpalatable				
East Fork	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+	60	928	186	557
Pine Creek	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+	60	558	112	335
Round Valley	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+	60	1895	379	1137
Split Hoof	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+	60	822	164	493
Spud Creek	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+	60	782	156	469
Sullivan Creek	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+	60	526	105	316
Thompson Creek	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+	60	230	46	138
																5741	1148	3445

1/ Summation of plants palatable and unpalatable for livestock use. Refer to TABLE 3-5 for methodology.

This alternative would provide beneficial impacts for the five-year period for the above-listed items and would be especially beneficial in respect to forage competition, survival, and reproduction of bighorn sheep on the East Fork Ranges. The reason for the decline in population should be determined before essential management measures can be applied in an effort to reverse the trend. The current hypothesis of the Idaho State Department of Fish and Game is that competition for forage in winter and spring with domestic livestock has caused their decline.

The estimated degree of adverse impacts that this alternative would have on wildlife and their habitat is indicated in TABLE 8-20 and estimated changes in habitat condition for the important game species are entered in TABLE 8-21. Projected percentage changes of habitat are in TABLE 8-22.

This alternative would be especially beneficial to deer in the East Fork, Round Valley, Pine Creek, Spud Creek, and Split Hoof (Maraffio and Woolley) Allotments; to antelope in the East Fork, Round Valley Split Hoof (Maraffio and Woolley), and Spud Creek Allotments; and to bighorn sheep in the East Fork Allotment, at least for the first five years.

Wild Horses. The alternative would be beneficial to wild horses because in the Split Hoof Allotment there would be exclusion of livestock for five years.

Forage normally consumed by cattle would be available for horse use. Also, because of the elimination of human activity associated with cattle management, there would be less disruption of the wild and free-roaming behavior of the horses.

TABLE 8-20

RELATIVE DEGREE OF IMPACT THAT LIVESTOCK GRAZING WOULD HAVE ON VARIOUS TYPES OF WILDLIFE AND THEIR HABITAT IN ALLOTMENTS IN THE CHALLIS PLANNING UNIT FOR ALTERNATIVE 4

Legend

1 = Low Impact 1/
2 = Moderate Impact
3 = High Impact
- = Little or No Impact
S = Spring
F = Fall

	Competition for Forage Between Livestock and Deer		Competition for Forage Between Livestock and Elk		Competition for Forage Between Livestock and Antelope		Competition for Forage Between Livestock and Bighorn Sheep		Competition for Forage Between Livestock and Small Mammals		Livestock Use of Wet Meadows, Stream Bottoms and Riparian Vegetation		Competition for Forage/ Cover with Conifer Dwelling Wildlife		Impact of Livestock on Nests of Ground and Shrub-Nesting Birds	
	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F
Bald Mountain	2	2	1	1	1	1	-	-	1	1	2	2	2	2	1	1
Bruno Creek	2	2	-	-	-	-	-	-	1	1	1	1	2	1	1	1
Garden Creek	3	3	-	-	3	3	1	3	2	1	3	3	1	1	2	1
Herd Creek	3	3	1	1	2	2	-	-	1	1	2	2	1	1	1	-
Red Lake	1	1	-	-	2	2	-	-	2	1	2	2	1	1	1	-
Road Creek	2	2	-	-	2	1	1	3	2	1	3	2	1	1	1	-
San Felipe/Peck Canyon	2	3	-	-	2	2	-	-	1	1	2	2	-	-	1	-
Squaw Creek	1	1	-	-	-	-	-	-	1	1	2	2	-	-	1	-
Warm Springs	3	3	2	3	3	3	-	-	2	2	3	2	1	1	2	1
East Fork	2	3	-	-	2	-	2	3	2	1	3	3	1	1	1	-
Pine Creek	2	2	-	-	-	-	-	-	2	2	3	2	1	1	1	-
Round Valley	3	2	-	-	3	2	-	-	3	1	1	-	-	-	2	-
Split Hoof																
Maraffio	3	1	-	-	3	1	-	-	2	-	-	-	-	-	1	-
Woolley	3	1	-	-	3	1	-	-	2	-	-	-	-	-	1	-
Spud Creek	3	3	-	-	3	2	-	-	3	2	3	3	1	1	3	-
Sullivan Creek	3	3	-	-	-	-	-	-	3	1	3	2	-	-	1	-
Thompson Creek	1	-	1	1	-	-	-	-	1	-	2	-	-	-	1	-

1/ 1, 2, 3 refer to relative adverse impacts.

TABLE 8-21

PRESENT CONDITION OF HABITAT FOR IMPORTANT GAME SPECIES IN THE CHALLIS PLANNING UNIT AND PREDICTED CHANGE IN CONDITION THAT WOULD OCCUR FOR ALTERNATIVE 4 1/

	Habitat Condition (Acres)					
	1975			1981		
Species	Poor	Fair	Good	Poor	Fair	Good
Deer						
Winter Range	26,111	25,992	1,885	13,839	26,048	14,101
Elk						
Winter Range	228	1,206	543	178	991	808
Antelope						
Yearlong	22,105	25,323	8,694	14,368	24,197	17,557
Summer	6,272	13,408	6,932	4,077	10,910	11,625
Bighorn Sheep						
Winter Range	3,205	3,827	107	1,699	3,534	1,906
Sage Grouse						
Brooding/Nesting	8,516	5,679	0	4,684	6,955	2,556
Winter Habitat	0	913	2,713	0	593	3,033

1/ Predicted condition for the entire unit.

TABLE 8-22

ESTIMATED PERCENTAGE OF HABITAT CHANGE PREDICTED FOR IMPORTANT GAME SPECIES IN THE CHALLIS PLANNING UNIT FOR ALTERNATIVE 4

Wildlife Species and Habitat Type	With Proposal	Alternative
Deer		
Winter Range		
Poor to Fair 1/	20%	23%
Fair to Good	20%	23%
Elk		
Winter Range		
Poor to Fair	20%	20%
Fair to Good	20%	20%
Antelope		
Yearlong Range		
Poor to Fair	25%	35%
Fair to Good	25%	35%
Summer Range		
Poor to Fair	25%	35%
Fair to Good	25%	35%
Bighorn Sheep		
Winter Range		
Poor to Fair	40%	40%
Fair to Good	40%	40%
Sage Grouse		
Brooding/Nesting		
Poor to Fair	35%	45%
Fair to Good	35%	45%
Winter Range		
Poor to Fair	35%	35%
Fair to Good	35%	35%

1/ Refers change from one condition to another.

Aquatic Life

In the seven allotments where livestock use would be discontinued for five years impacts would be highly beneficial, resulting in correspondingly higher fish populations of rainbow, cutthroat, steelhead, etc. on 17.5 miles of stream habitat. A comparison between existing and predicted habitat conditions after five years in fish-producing streams of the seven areas is as follows:

	Existing Conditions (1975) (Miles)			Future Conditions (1980) (Miles)		
Stream	Good	Fair	Poor	Good	Fair	Poor
Big Lake Creek			1.5		1.5	
Big Boulder Creek		.8			.8	
Little Boulder Creek		1.3		1.3		
Corral Creek		.5		.5		
Pine Creek		1.8		1.8		
Spud Creek			1.2		1.2	
Sullivan Creek	1.5			1.5		
French Creek			1.4		1.4	
Thompson Creek		5.5	2.0	5.5	2.0	
Totals	1.5	9.9	6.1	10.6	6.9	

Big Boulder Creek would not be expected to improve in five years due to other activities affecting the stream.

If habitat improvements were to progress without the influence of grazing by domestic livestock for fifteen years, the following conditions are predicted to occur:

HABITAT CONDITIONS

	Existing Conditions (Miles)			Alternative after 15 yrs. (Miles)		
	Good	Fair	Poor	Good	Fair	Poor
Anadromous & Resident Fish	15.5	13.1	4.4	16.8	16.0	.2
Resident Fish Only	2.0	24.5	22.2	12.8	17.8	18.1
Totals	17.5	37.6	26.6	29.6	33.8	18.3
Percent ( )	(21)	(46)	(33)	(36)	(44)	(23)

The impact of sedimentation on fish habitat from construction of four and one-half miles of boundary fences (Refer to MAP 8-3) to prevent livestock from using the seven areas would be the same as discussed for fences in Chapter 3. Little or no short-term impacts on fish habitat would be anticipated as a result of the fencing.

Agriculture

Farming. The discontinuance of livestock grazing in seven allotments involving 17 livestock operations would probably result in adverse impacts on hay production. The operators would be required to acquire or develop spring grazing for their livestock. If cattle are held on private lands

longer in the spring at a time when irrigation usually begins, lower crop yields could result. Reduced yields have not been estimated nor quantified, but would be an adverse impact on farming.

Livestock Grazing. Implementing AMPs on nine allotments would result in an increase of 2,304 AUMs grazing use. This increase is considered a beneficial impact as described for Alternative 3 and the proposed action described in Chapter 3. The beneficial impact is partially offset by discontinuance of all grazing use in the remaining seven allotments.

Discontinuing livestock grazing in seven allotments would result in a loss of 1,721 AUMs grazing on NRL. In order to maintain their current livestock numbers, the 17 operators would be required to acquire or develop additional grazing in place of that on NRL which would be an adverse impact.

The net effect on livestock grazing in the Challis Unit would be an increase of 583 AUMs annually for the five year period.

Mitigation. Unit-wide increases in grazing use in the nine allotments under AMPs would mitigate the loss of grazing use in the remaining seven allotments. The net effect is considered a beneficial impact. However, the adverse impacts on operators using the seven allotments would not be mitigated.

Unavoidable Adverse Impacts. Adverse impacts which would occur as a result of discontinuing livestock grazing in the seven allotments are considered unavoidable.

Visual Resources

Conditions in the seven allotments the first five years would be similar to what would be experienced under Alternative 2, discontinue livestock grazing. Potential modification to the naturalistic landscape by livestock grazing and the development of range improvements would not occur.

There would be no trucking or trailing of livestock to these allotments, so the localized dust problems would not lower visual quality.

Livestock would be removed from watercourses which would enable streamside vegetation to become reestablished, thus improving visual quality.

Sites directly adjacent to stockwater that had been disturbed by livestock concentrations would have a chance to recover and restore naturalistic landscape conditions.

The potential for soil movement would be reduced, causing less disturbance to the landscape from erosion.

An overall summation of impacts for the alternative are listed in TABLE 8-23.

TABLE 8-23

SUMMARY OF PREDICTED IMPACTS FOR VISUAL AND RECREATIONAL RESOURCES FOR ALTERNATIVE 4

	RATING	
Resource	Proposed Action	Alternative Four
Visual	- 1/	+
Recreation	+	++

1/ Refer to TABLE 8-5 for rating criteria.

Recreational Resources

Recreation opportunities for all activities except those involving aquatic and terrestrial wildlife would increase at the same rate as anticipated for the nine allotments with implemented AMPs.

The aquatic habitat would be slightly improved over the present conditions in the excluded allotments. As a result, opportunities to fish and view fish would also increase slightly.

Terrestrial habitat would be highly improved in the allotments, with a corresponding improvement for the hunting and viewing of wildlife.

Since wild horses would be managed according to the proposed plan, opportunities to view these animals would be good.

Refer to TABLE 8-23 for a summation of predicted impacts of the alternative for recreation.

Cultural Resources

Total non-use for a period of five years in the seven areas would result in a decrease in adverse impacts to 29 known cultural properties susceptible to damage by livestock trampling and erosion. The following National Register eligible properties would continue to receive adverse impacts from livestock trampling when cattle are trailed through the use area semi-annually:

Split Hoof: 7 properties

Sullivan Creek: 1 property

Spud Creek: 1 property

Socio-economics

Implementing AMPs for livestock management of nine allotments would result in an increase of 3,204 AUMs over the six year average licensed grazing use. However, no grazing use of NRL would be available in the remaining seven allotments - a decrease of 1,721 AUMs each year for five years. Considering the Challis Unit as a composite, there would be a net increase of 583 AUMs over the six year average licensed grazing use (FIGURE 8-4).

Individual operators could experience adverse economic impacts if additional grazing is not acquired or developed for the five year period. As discussed in previous chapters, individual livestock operations are variable and impacts have not been identified nor quantified on an individual basis.

The alternative would result in a net increase of 583 AUMs which would be expected to have a positive income effect - a beneficial impact. Approximately $2,484 in additional income would be generated annually equal to $12,420 for the five year period (583 AUMs x $2.85 x 1.495 = $2,484.02).

Ranch values would tend to remain unchanged during the five year period. However, if the level of grazing use (18,009 AUMs) were to continue, property values would be expected to increase slightly on the average. This is estimated at about $48,580 (583 AUMs ÷ 12 x $1,000 = $48,583). Estimated tax revenue would increase about $476 ($7,140 annually cumulative for fifteen years) ($48,580 x .14 x .07 = $476.08). Considering the property value and tax revenues of record for 1974, this change would be an imperceptible impact to Custer County.

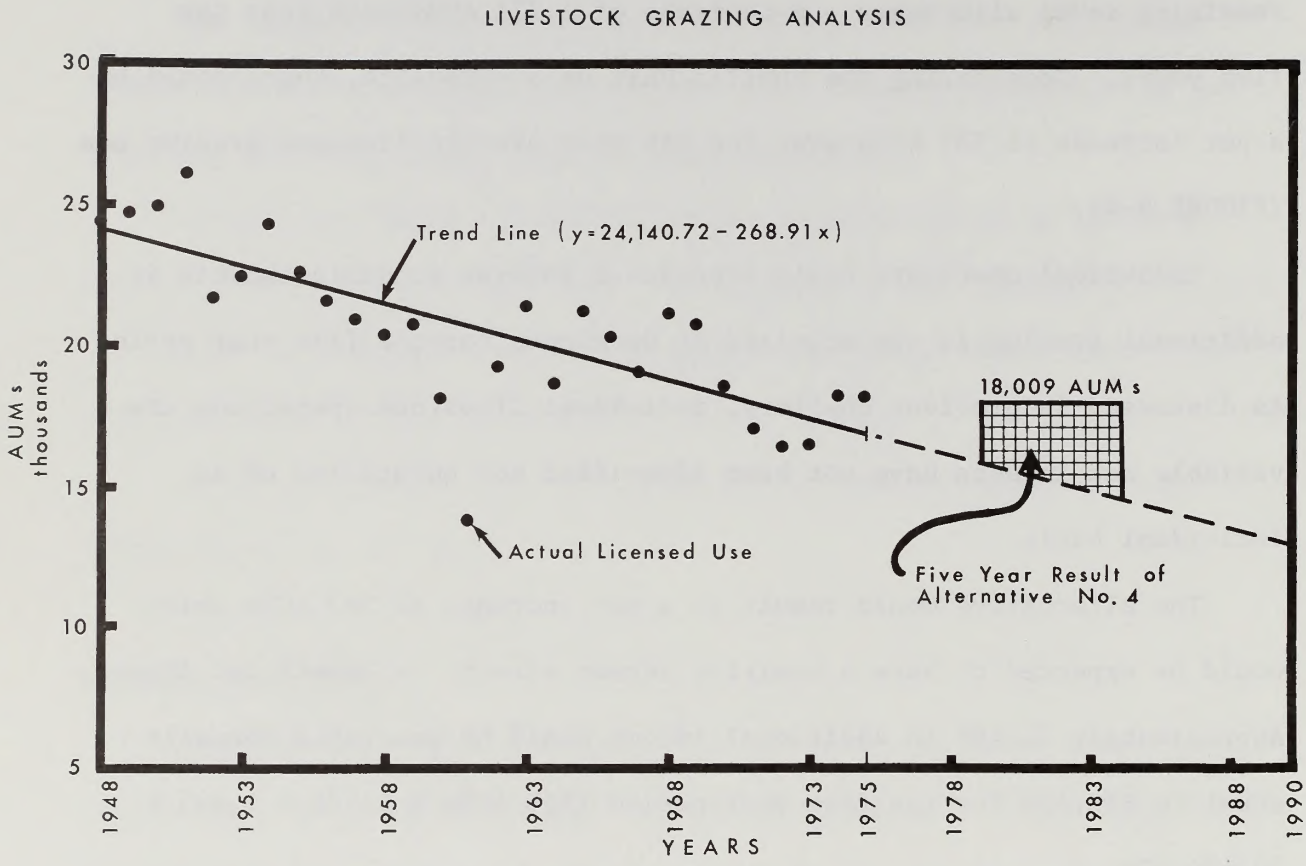


FIGURE 8-4 LIVESTOCK GRAZING ANALYSIS ALTERNATIVE NO. 4

Unavoidable Adverse Impacts. Adverse impacts experienced by individual livestock operators as a result of no grazing use for at least a five year period are considered unavoidable.

IMPLEMENT AMPs ON ELEVEN ALLOTMENTS VS. ONE-PASTURE GRAZING SYSTEMS ON FIVE AREAS (ALTERNATIVE 5)

Description

This alternative would involve implementing proposed AMPs on the Bald Mountain, East Fork, Garden Creek, Herd Creek, Road Creek, San Felipe/Peck Canyon, Spud Creek, Squaw Creek, Sullivan Creek, Thompson Creek and Warm Springs Allotments (TABLE 8-24).

Bruno Creek, Pine Creek, Red Lake, Round Valley and Split Hoof would remain as one-pasture areas (MAP 8-3). During year one these areas would be grazed from 5/16 through seedripe time of the key livestock forage species (7/15) at which time all livestock would be removed. The second year of grazing would begin with seedripe time of the key livestock forage species (7/16) and continue through 9/15. There would be no livestock grazing in year 3. The cycle of years 1, 2, and 3 would then repeat each succeeding three years. Range improvements would be restricted to those minimum management facilities, such as fences and water developments, authorized by BLM Section 4 permits or cooperative agreements.

Impacts, mitigating measures, and unavoidable adverse impacts for the eleven allotments for which AMPs would be implemented would be the same as discussed for them in Chapters 3, 4, and 5, respectively.

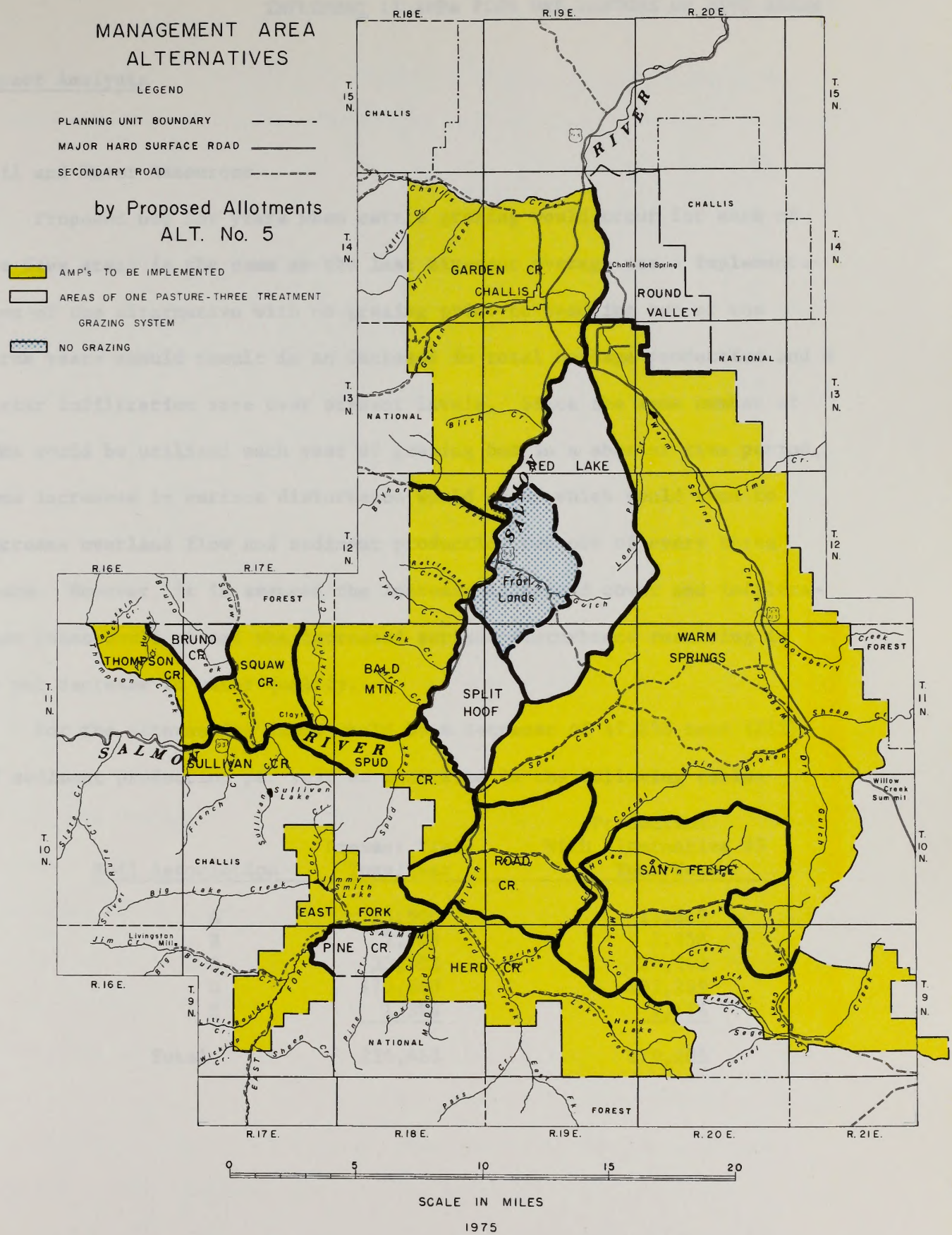
Impacts, mitigating measures, and unavoidable adverse impacts for the remaining five allotments are described as follows:

TABLE 8-24

DOMESTIC LIVESTOCK AUM USE FOR ALTERNATIVE FIVE AND NET AUM USE CHANGE AS COMPARED TO THE PRESENT

	Allotment	Acres	6 Year Average AUM Use	AUM Use As Proposed In AMP	AUM Modifications Year 1 5/16-7/15 1/	Year 2 7/16-9/15 2/	Year 3 No Use 3/	Average Use/Year For Modification	Total Yearly Livestock AUM Use For Alternative	Net AUM Use Change From Present
Implement AMPs	Bald Mountain	24,761	617	660	0	0	0	0	660	+ 43
	East Fork	15,000	503	443	0	0	0	0	433	- 70
	Garden Creek	31,638	930	907	0	0	0	0	907	- 23
	Herd Creek	24,688	1,222	1,035	0	0	0	0	1,035	- 187
	Road Creek	16,074	582	614	0	0	0	0	614	+ 32
	San Felipe/Peck Canyon	41,335	3,287	3,387	0	0	0	0	3,387	+ 100
	Spud Creek	9,426	250	265	0	0	0	0	265	+ 15
	Squaw Creek	8,820	468	364	0	0	0	0	364	- 104
	Sullivan Creek	4,945	88	104	0	0	0	0	104	+ 16
	Thompson Creek	5,835	140	9	0	0	0	0	9	- 131
	Warm Springs	109,141	7,382	9,580	0	0	0	0	9,580	+2,198
One-Pasture Management	Round Valley	13,583	373		373	373	0	249	249	- 124
	Bruno Creek	2,453	125		125	125	0	83	83	- 42
	Pine Creek	4,294	181		181	181	0	121	121	- 60
	Red Lake	25,332	1,092		1,092	1,092	0	728	728	- 364
	Split Hoof	9,655	186		186	186	0	124	124	- 62
	TOTALS	346,981	17,426	17,358	1,957	1,957	0	1,305	18,663	+1,237

1/ Treatment A (5/16-7/15)
2/ Treatment B (7/16-9/15)
3/ Treatment C No Use



MAP 8-3 ALTERNATIVE 5 ALLOTMENTS

Impact Analysis

Soil and Water Resources

Proposed use for years when cattle grazing would occur for each of the five areas is the same as the last six-year average use. Implementation of the alternative with no grazing prior to seedripe two of the three years should result in an increase in total herbage production and a faster infiltration rate over present levels. Since the same number of AUMs would be utilized each year of grazing but in a shorter time period, some increases in surface disturbance would occur which would tend to increase overland flow and sediment production two out of every three years. However, it is assumed the increase in ground cover and infiltration rates would offset the increased surface disturbance resulting in no net decrease in water quality.

For the alternative there would be a decrease of 47,258 tons (21%) of sediment production per year as indicated in the following table:

Soil Association	Present Yield Tons/Year	Production With Alternative #5 Tons/Year
A	15,500	13,640
B	2,908	2,558
C	33,031	28,562
D	173,640	133,269
E	1,384	1,176
Total	226,463	179,205

Unavoidable Adverse Impacts. Loss of 29,821 tons of soil per year in excess of that which would be lost by natural geologic erosion processes.

Vegetation

The percent of production potential estimated to be achieved for each of the five allotments is entered in TABLE 8-25. For the sixteen allotments there would be a 16,022 AUM increase in production after a fifteen-year period. Net AUM difference for all allotments after five and fifteen years would be 2,184 and 13,086, respectively. Allotments with less forage than at present after fifteen years (TABLE 8-26) would be Warm Springs (-2,849 AUMs) and Bruno Creek (-333 AUMs).

Treatment A would be adverse for the short term in the Bruno Creek and Pine Creek Allotments managed under this alternative. These short-term impacts to desirable plants for livestock use would cause a reduction in carbohydrate root reserve storage, less seed to be produced and less seedlings or new young plants to become established. There would also be more soil compaction and associated plant damage. Only slight adverse impacts to the less desirable or undesirable species for livestock use would occur except for soil compaction. Soil compaction would be the same for the undesirable plants. Adverse impacts to the less desirable plants would also occur during Treatment A due to concentrating livestock use resulting in more utilization of these plants than now occurs, thus interfering more with normal life processes.

Some adverse impacts to vegetation would occur on Split Hoof and Red Lake allotments, due to wild horse use of rested pastures. These impacts cannot currently be quantified.

TABLE 8-25

NUMERICAL RATINGS FOR ESTIMATING AUMs PRODUCTION

Rating Scale
B+ = 9
B = 6
B- = 3
N = 0
A- = -3
A = -6
A+ = -9

A = Adverse
B = Beneficial
N = No Change

	CARBOHYDRATE RESERVES AND PLANT VIGOR		SEED PRODUCED		SEED SHATTERING AND TRAMPLING		SEEDLING ESTABLISHMENT		LITTER ACCUMULATION Soil Fertility/Plant Growth		CONCENTRATING LIVESTOCK Plants Affected		SOIL COMPACTION Plant Growth		TOTAL NUMERICAL RATING = % Potential Achieved for Palatable and Unpalatable 1/ Plants	15-Year Additional AUMs Produced	5-Year Difference in Present and Potential Production AUMs
	Palatable	Unpalatable	Palatable	Unpalatable	Palatable	Unpalatable	Palatable	Unpalatable	Palatable	Unpalatable	Palatable	Unpalatable	Palatable	Unpalatable			
Bruno Creek	B+	B-	B+	B-	B+	B-	B+	B-	B	B-	B	A	B-	B-	63	23	37
Pine Creek	B+	B-	B+	B-	B+	B-	B+	B-	B	B-	B	A	B-	B-	63	352	558
Red Lake	B+	B-	B+	B-	B+	B-	B+	B-	B+	B-	B+	A+	B	B	72	2105	2932
Round Valley	B+	B-	B+	B-	B+	B-	B+	B-	B+	B-	B+	A+	B	B	72	1364	1895
Split Hoof	B+	B-	B+	B-	B+	B-	B+	B-	B+	B-	B+	A+	B	B	72	592	822
																4436	6235

1/ Summation of plants palatable and unpalatable for livestock use. Refer to TABLE 3-5 for methodology.

TABLE 8-26

PREDICTED AUM PRODUCTION FOR ALTERNATIVE 5, TOTAL AUM USE PROPOSED AND COMMITTED, AND NET AUM DIFFERENCE AFTER 5 and 15 YEARS.

		Present Production	Additional Production After 15 Years to be Achieved by Management	Total Production After 15 Years	Total AUMs Proposed & Committed	Net AUM Difference After 5 Years	Net AUM Difference After 15 Years
Implement AMPs	1. Bald Mountain	1,084	1,384	2,468	1,237	206	1,231
	2. East Fork	1,925	535	2,460	1,022	240	1,438
	3. Garden Creek	2,287	2,500	4,796	1,604	523	3,192
	4. Herd Creek	1,848	1,934	3,782	1,497	382	2,285
	5. Road Creek	1,004	720	1,724	1,411	52	313
	6. San Felipe/Peck	5,316	3,298	8,614	5,416	534	3,198
	7. Spud Creek	523	442	965	713	42	252
	8. Squaw Creek	573	434	1,007	597	68	410
	9. Sullivan Creek	122	205	327	190	23	137
	10. Thompson Creek	196	131	327	231	16	96
	11. Warm Springs	11,367	- 6	11,363	14,212	-476	-2,849
	SUBTOTAL	26,245	11,586	37,833	28,130	1,620	9,703
One Pasture Three Treatment Management	12. Bruno Creek	8	23	31	364	- 56	- 333
	13. Pine Creek	447	352	799	265	89	534
	14. Red Lake	1,006	2,105	3,111	2,552	93	559
	15. Round Valley	1,403	1,364	2,767	530	374	2,237
	16. Split Hoof	733	592	1,325	939	64	386
	SUBTOTAL	3,597	4,436	8,033	4,650	564	3,383
	TOTAL	29,842	16,022	45,864	32,780	2,184	13,086

Identified ET plant locations are all, with the exception of Malm Gulch site, within allotments that would be managed under this alternative. The impact of implementing AMPs under this alternative would be the same as under the proposal and would be mitigated 100%.

On these allotments, which would be managed as one-pasture, three-treatment systems, ET plants that may be present would benefit just as any other plants. No adverse impact for ET plants is expected should this alternative be implemented.

Unavoidable Adverse Impacts. Short-term adverse impacts in Bruno Creek and Pine Creek Allotments as discussed above would be unavoidable.

Terrestrial Animals

In the Round Valley, Bruno Creek, Pine Creek, Red Lake, and Split Hoof (Maraffio and Woolley) Allotments, the following general benefits to wildlife would occur two years out of three (compared to present use): (1) less disturbance of nests of ground and shrub-nesting birds, (2) less competition for forage in the spring with big game animals and less competition and/or disturbance of deer and antelope at fawning time, (3) less utilization of wet meadows and stream bottoms that are important to many wildlife species, and (4) less competition with small wildlife species for forage and less removal of cover. General benefits would be essentially the same as those discussed for Treatment A for the proposed action in Chapter 3.

Differences that would occur between present use and proposed use under this alternative in the Bruno Creek, Pine Creek, Red Lake, and Split Hoof Allotments are as follows: (1) the grazing period would be

reduced by one month in the fall in the Pine Creek Allotment, (2) grazing would commence two weeks later in the spring in the Red Lake Allotment but would continue about three weeks later into the fall than at present (9/15 compared to 8/21), and (3) grazing would commence two weeks later in the spring in the Split Hoof Allotment but would be authorized for two additional months in the late summer and fall (7/15 to 9/15, every third year). Grazing in the fall would cause the general impacts described for Treatment B in Chapter 3. Impacts resulting from this later summer and fall use would be moderate to high on deer and antelope because of cattle use of shrubs that these big game animals might need in winter, and generally moderate impacts on the small terrestrial animals that normally utilize wet meadows, stream bottoms, and associated riparian vegetation. The amount of impact on the big game animals would depend on the number and type of big game species present and the importance of their habitat during critical seasons of the year in the allotments involved. Relative impacts for the alternative are in TABLE 8-27. The Red Lake Allotment has the largest summer and winter deer herd of the four allotments where AMPs would not be implemented.

Overall general impacts of this alternative would be much the same as those for the proposed action, since eleven of the sixteen allotments in the planning unit would have proposed allotment management plans implemented. The estimated change in habitat condition for the important game species would be as indicated in TABLE 8-28. In TABLE 8-29 estimated percentages of habitat changes are listed.

TABLE 8-27

RELATIVE DEGREE OF IMPACT THAT LIVESTOCK GRAZING FOR ALTERNATIVE 6 WOULD HAVE ON VARIOUS TYPES OF WILDLIFE AND THEIR HABITAT

Legend

1 = Low Impact 1/
2 = Moderate Impact
3 = High Impact
- = Little or No Impact
S = Spring
F = Fall

	Competition for Forage Between Livestock and Deer		Competition for Forage Between Livestock and Elk		Competition for Forage Between Livestock and Antelope		Competition for Forage Between Livestock and Bighorn Sheep		Competition for Forage Between Livestock and Small Mammals		Livestock Use of Wet Meadows, Stream Bottoms and Riparian Vegetation		Competition for Forage/ Cover with Conifer Dwelling Wildlife		Impact of Livestock on Nests of Ground and Shrub-Nesting Birds	
	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F
Bald Mountain	2	2	1	1	1	1	-	-	1	1	2	2	2	2	1	1
Garden Creek	3	3	-	-	3	3	1	3	2	1	3	3	1	1	2	1
Herd Creek	3	3	1	1	2	2	-	-	1	1	2	2	1	1	1	-
Road Creek	2	2	-	-	2	1	1	3	2	1	3	2	1	1	1	-
San Felipe/Peck Canyon	2	3	-	-	2	2	-	-	1	1	2	2	-	-	1	-
Squaw Creek	1	1	-	-	-	-	-	-	1	1	2	2	-	-	1	-
Warm Springs	3	3	2	3	3	3	-	-	2	2	3	2	1	1	2	1
East Fork	2	2	-	-	1	1	1	1	1	-	3	2	1	-	1	-
Spud Creek	2	2	-	-	2	2	-	-	1	-	3	2	1	-	1	-
Sullivan Creek	2	1	-	-	-	-	-	-	1	-	1	-	-	-	1	-
Pine Creek	1	1	-	-	-	-	-	-	1	-	3	2	1	-	1	-
Round Valley	1	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-
Bruno Creek	1	1	-	-	-	-	-	-	-	-	2	2	1	-	1	-
Red Lake	3	2	-	-	3	3	-	-	3	2	-	-	-	-	2	-
Split Hoof	1	1	-	-	1	1	-	-	1	-	-	-	-	-	1	-
Thompson Creek	1	-	-	-	-	-	-	-	1	-	2	-	-	-	1	-

1/ 1, 2, 3 refer to relative adverse impacts

TABLE 8-28

PRESENT CONDITION OF HABITAT FOR IMPORTANT GAME SPECIES IN THE CHALLIS PLANNING UNIT AND ESTIMATED CHANGE IN CONDITION THAT MIGHT OCCUR FOR ALTERNATIVE 5

Species	Habitat Condition (Acres)					
	1975			1990		
	Poor	Fair	Good	Poor	Fair	Good
Deer						
Winter range	26,111	25,992	1,885	20,106	26,019	7,863
Elk						
Winter range	228	1,206	543	182	1,011	784
Antelope						
Yearlong	22,105	25,323	8,694	14,368	24,197	17,557
Summer	6,272	13,408	6,932	4,077	10,910	11,625
Bighorn Sheep						
Winter range	3,205	3,827	107	1,923	3,578	1,638
Sage grouse						
Brooding/ Nesting	8,516	5,679	0	4,684	6,955	2,556
Winter Habitat	0	913	2,713	0	593	3,033

TABLE 8-29

ESTIMATED PERCENTAGE OF HABITAT CHANGE THAT WOULD BE EXPECTED TO OCCUR FOR THE IMPORTANT GAME SPECIES IN THE VARIOUS ALLOTMENTS OF THE CHALLIS PLANNING UNIT WITH IMPLEMENTATION OF ALTERNATIVE 5

Wildlife Species and Habitat Type	With Proposal	Alt. 5
Deer		
Winter range		
poor to fair	20%	25%
fair to good	20%	25%
Elk		
Winter range		
poor to fair	20%	25%
fair to good	20%	25%
Antelope		
Yearlong range		
poor to fair	25%	30%
fair to good	25%	30%
Summer range		
poor to fair	25%	30%
fair to good	25%	30%
Bighorn sheep		
Winater range		
poor to fair	40%	10%
fair to good	40%	10%
Sage grouse		
Brooding/Nesting		
poor to fair	35%	35%
fair to good	35%	35%
Winter range		
poor to fair	35%	35%
fair to good	35%	35%

Wild Horses. Management of Red Lake and Split Hoof Allotments as one-pasture, three-treatment systems would benefit horses because fences would not be built, water developments would not be established and livestock use would not be intensified during Treatments A and B. The three pastures would result in horse behavior on habitat not being modified. Also, horse winter ranges would have more forage for horse use, and during periods when cattle were not grazing (i.e., periods before grazing would be initiated during Treatment B years and during Treatment C years) horses would have use unhampered by activities associated with cattle.

Unavoidable Adverse Impacts. Refer to Chapter 5 for specific unavoidable impacts which would be pertinent for Bruno Creek, Pine Creek, Red Lake, Round Valley and Split Hoof Allotments.

Aquatic Life

Habitat conditions in Pine Creek (1.8 miles from fair to good) and in Bruno Creek (3.0 miles from fair to good) would improve in allotments where one-pasture, three-treatment systems would be implemented. Conditions within the sixteen allotments after fifteen years as compared to the present would be as follows:

Habitat Condition

	Existing Conditions (miles)			Alternative 5 (miles)		
	Good	Fair	Poor	Good	Fair	Poor
Anadromous & Resident Fish	15.5	15.1	4.4	15.5	16.1	1.4
Resident Fish Only	2.0	24.5	22.2	12.3	15.4	21.0
Totals	17.5	37.6	26.6	27.8	31.5	22.4
Percent ( )	(21)	(46)	(33)	(34)	(39)	(27)

In summary, after fifteen years 10.3 miles of stream habitat would improve and there should be a corresponding increase of fish populations.

Unavoidable Adverse Impacts. Refer to impacts described in Chapter 5.

Agriculture

Farming. This alternative would involve the implementation of AMPs in eleven allotments and five allotments would be managed as one-pasture, rest-rotation systems. Deferring grazing until about July 15 one out of three years for the second group of allotments would result in a shortage of spring grazing. Similarly, no grazing of these allotments one year out of three would result in an additional shortage of grazing. The nineteen operators involved would be required to acquire or develop additional spring grazing for two out of three years. Where cattle would be maintained on private lands used for hay production for longer periods in the spring, hay production would be adversely affected. Individual operators would have to acquire forage equivalent to 1,957 AUMs of spring grazing. Potential decreases of hay production could result from animals being retained

on base properties. Irrigation could be delayed and yield would be diminished.

Livestock Grazing. Implementing AMPs in eleven allotments would result in a net increase of 1,889 AUMs over the six-year average licensed grazing use. Applying 3-treatment one-pasture systems would result in a net decrease of 652 AUMs from the six-year average licensed use. Overall, the alternative would result in a net increase of 1,237 AUMs through implementation of 11 AMPs and 5 three-treatment one-pasture systems (TABLE 8-24). In five allotments, grazing would not be permitted every third year. As discussed for the other alternatives and in Chapter 3, adverse impacts have not been identified nor quantified for individual livestock operators. Recognizing individual operators would experience varying degrees of adverse impacts, the overall impact is an increase in grazing use which would be beneficial. Changes in grazing patterns and levels of use would not be of sufficient magnitude to alter the basic livestock industry, but would alter individual operations.

Unavoidable Adverse Impacts. Adverse impacts addressed above are considered to be unavoidable.

Visual Resources

For the one-pasture allotments, there would be some visual contrast between them and adjacent allotments where AMPs would be implemented because of differences in livestock management. However, it is predicted that the impact of the contrast would be slight. A beneficial impact would be that fences would not be constructed to divide pastures thus

eliminating landscape modifications. Impacts on visual resources for Alternative 5 (all sixteen allotments) are summarized in TABLE 8-30.

TABLE 8-30

SUMMARY OF IMPACTS FOR ALTERNATIVE FIVE

Resource	Proposed Action	Alternative 5
Visual	-	-
Recreation	+	+

Impacts, mitigating measures and unavoidable adverse impacts would be the same as discussed in Chapter 3.

Recreation Resources

Impacts as discussed in Chapter 3 would be the same for all allotments except as opportunities relate to consumptive and nonconsumptive aquatic and terrestrial wildlife uses.

The aquatic habitat and opportunities to fish or view fish would be slightly better in the five areas managed as 3-treatment one-pasture systems. Also, wildlife habitat and recreation opportunities would be moderately improved.

Since wild horses would be managed according to the proposed plan, opportunities to view animals would be good.

Overall impacts on recreation for the alternative are summarized in TABLE 8-30.

Mitigating measures for recreation in Chapter 4 would apply as would unavoidable impacts discussed in Chapter 5.

Cultural Resources

Impacts to cultural sites under this alternative would be the same as stated for the proposed action (see Chapter 3, General Impacts to Cultural Resources).

Mitigation. The 37 National Register eligible cultural properties susceptible to damage for this alternative would be protected by appropriate physical measures and/or 106/2(b) statement recommendations (assuming they are followed). Mitigation of adverse impacts to the remaining 140 known National Register ineligible cultural properties and to an unknown number of the estimated 750 unknown cultural properties would be the same as outlined in Chapter 4 (Cultural Resource Mitigation).

Unavoidable Adverse Impacts. Unavoidable adverse impacts to cultural properties as the result of livestock grazing would be the same as discussed in Chapter 5. However, disturbance would continue to occur on 140 known and an unknown number of the estimated 750 unknown cultural properties for three years until the proposed cultural resource management activity plan outlined in Chapter 4 (Cultural Resource Mitigation) could be completed.

Socio-economics

Implementation of the alternative would result in both beneficial and adverse economic impacts. Levels of grazing use in the eleven allotments under AMPs would result in a net increase of 1,889 AUMs over the six-year

average licensed use. In the remaining five allotments there would be a decrease of 652 AUMs grazing use--an adverse impact. Impacts have not been determined for each individual operator. Unitwide, there would be an increase on 1,237 AUMs grazing use--a beneficial impact (FIGURE 8-5).

The income effect of the alternative would be approximately $5,270 annually or about $79,000 for a fifteen-year period (1,237 AUMs x 2.85 x 1.495 = $5,270.55). Ranch values could be slightly increased (+$103,000) as a result of the grazing increases. Tax revenues would be expected to increase approximately $1,009 annually ($103,000 property value x .14 x .07 = $1,009.40 = $15,141 cumulative).

Unavoidable Adverse Impacts. Adverse impacts which would affect the individual livestock operators, though not specifically quantified, are considered to be unavoidable.

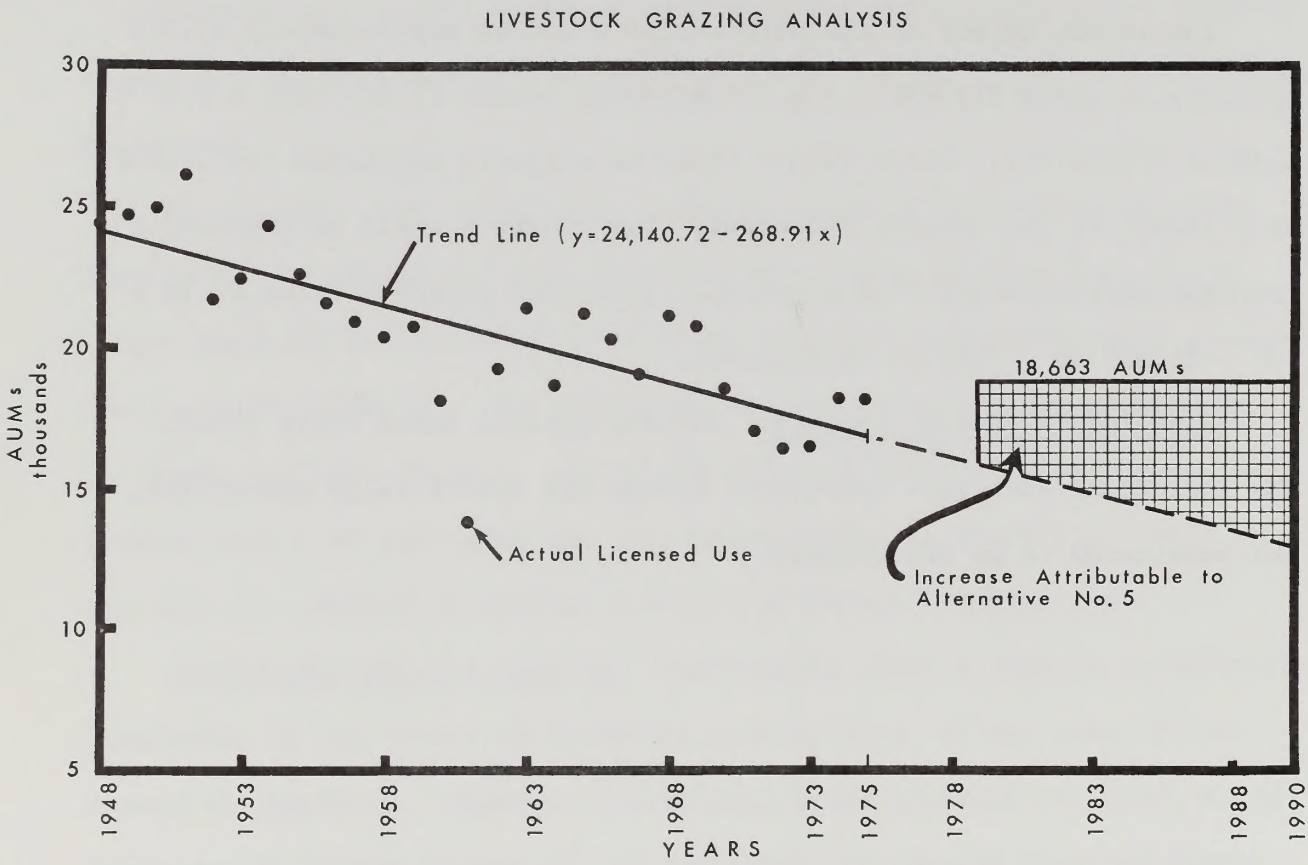


FIGURE 8-5 LIVESTOCK GRAZING ANALYSIS ALTERNATIVE NO. 5

IMPLEMENT PROPOSED AMPs ON FIVE ALLOTMENTS, MODIFIED AMPs ON FOUR ALLOTMENTS, AND ADJUST SEASON OF USE AND AUMs ON SEVEN ALLOTMENTS (ALTERNATIVE 6)

Description

This alternative would involve three approaches: (1) implementing proposed AMPs in the San Felipe/Peck Canyon, Bruno Creek, Bald Mountain, Squaw Creek and Herd Creek Allotments, (2) implementing modified AMPs for Warm Springs, Road Creek, Split Hoof and Red Lake Allotments; at the six-year average AUM use level for the first two grazing cycles. If vegetative responses are favorable, proposed use could be permitted and (3) remaining allotments would have season of use dates and AUMs (MAP 8-4, TABLE 8-31) modified. Additionally, for the third category range improvements would be restricted to those authorized by BLM Section 4 permits or cooperative agreements. If necessary, boundary fences would be constructed by BLM.

Impact Analysis

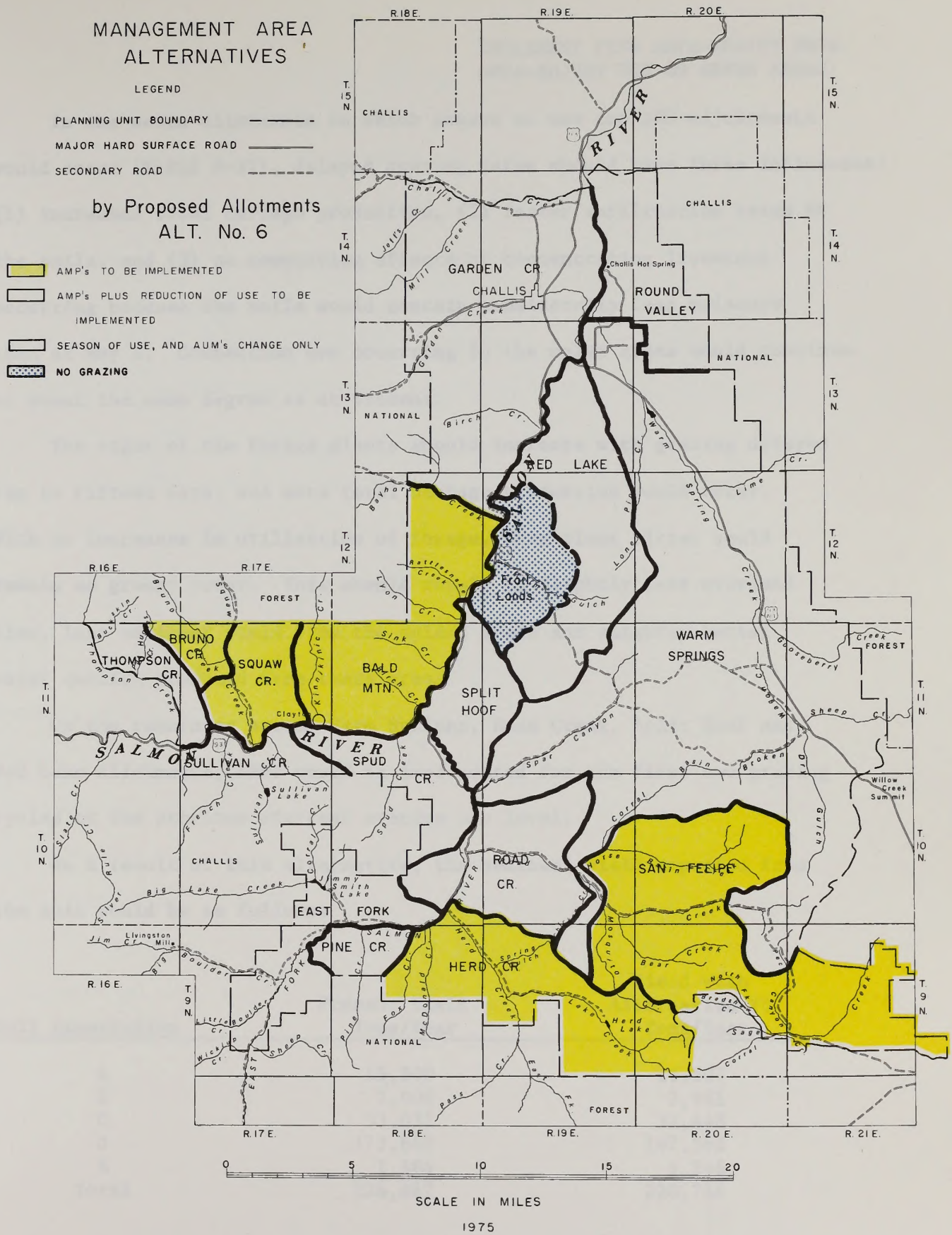
Soil and Water Resources

Impacts on San Felipe, Bruno Creek, Bald Mountain, Squaw Creek, and Herd Creek Allotments would be the same as described in Chapter 3. Mitigating measures would be the same as shown in Chapter 4 and the unavoidable impacts would be the same as discussed in Chapter 5.

TABLE 8-31

DOMESTIC LIVESTOCK AUM USE FOR ALTERNATIVE 6 AND NET AUM USE CHANGE AS COMPARED TO THE PRESENT

	Allotments	Acres	6 Year Average AUM Use	AUM Use As Proposed In AMP	Modified AUM Use For Allotments	Spring Period	Spring AUMs	Fall Period	Fall AUMs	Livestock Total AUM Use For Alternative	Net AUM Use Change From Present
Implement Proposed AMPs	San Felipe/ Peck Canyon	41,335	3,287	3,387						3,387	+ 100
	Bruno Creek	2,453	125	67						67	- 58
	Bald Mountain	24,761	617	660						660	+ 43
	Squaw Creek	8,820	468	364						364	- 104
	Herd Creek	24,688	1,222	1,035						1,035	- 187
Implement Modified AMPs	Warm Springs	109,141	7,382		7,382					7,382	0
	Road Creek	16,074	582		582					582	0
	Split Hoof	9,655	186		186					186	0
	Red Lake	25,332	1,092		1,092					1,092	0
Season of Use/ AUM Adjustment	Round Valley	13,583	373			5/16-7/31	373		0	373	0
	Garden Creek	31,638	930			5/16-9/15	930		0	930	0
	Thompson Creek	5,835	140			5/16-5/30	9		0	9	- 131
	Spud Creek	9,426	250			5/20-6/15	250		0	250	0
	Sullivan Creek	4,945	88			5/20-6/15	73	10/1-10/15	15	88	0
	Pine Creek	4,294	181			5/20-6/15	110	10/1-10/15	70	180	+ 1
	East Fork	15,000	503			5/20-6/15	355	10/1-10/7	148	503	0
	Totals	346,980	17,426				2,100		233	17,088	- 336



MAP 8-4 ALTERNATIVE 6 ALLOTMENTS

In the seven allotments in which season of use and AUM adjustments would occur (TABLE 8-31), delayed opening dates should have three influences: (1) increased total herbage production, (2) faster infiltration rates of the soils, and (3) no compaction effects of concentrating livestock occurring because the soils would contain considerably less moisture than at May 1. Compaction now occurring in the moist areas would continue at about the same degree as at present.

The vigor of the forage plants should increase with grazing delayed ten to fifteen days, and more total herbage production would occur. With no increases in utilization of forage, more plant litter would remain as ground cover. This should result in slightly less overland flow, less sediment yield from the upland areas and slightly better water quality produced from these areas.

On the remaining areas; Warm Springs, Road Creek, Split Hoof and Red Lake Allotments, AMPs would be implemented for the first two grazing cycles at the previous six-year average use level.

As a result of this alternative, the sediment yield expected from the unit would be as follows:

Soil Association	Present Yield Tons/Year	Yield With Alternative #6 Tons/Year
A	15,500	16,507
B	2,908	2,981
C	33,031	32,448
D	173,640	167,562
E	1,384	1,246
Total	226,463	220,744

Unavoidable Adverse Impacts. Loss of 71,360 tons of soil per year after fifteen years in excess of losses predicted for natural geologic erosion. Refer to Chapter 5 for other impacts.

Vegetation

For the first five allotments (TABLE 8-32) proposed AMPs would be implemented and impacts, mitigative measures, and adverse unavoidable impacts would be the same as discussed for them in Chapter 3.

There would be short-term adverse impacts during Treatment A in all pastures of the four allotments (Red Lake, Road Creek, Split Hoof, and Warm Springs) in which AUMs for livestock would be restricted for the first two grazing cycles to the previous six-year average use. Short-term adverse impacts to desirable plants for livestock use would result in a reduction in carbohydrate root reserve storage, less seed produced and less seedlings or new plants becoming established. Adverse impacts would also result in more soil compaction and associated plant damage. These impacts would only be slightly adverse for the less desirable or undesirable plants for livestock use except for soil compaction which would affect both the desirable and undesirable plants equally. Adverse impacts to the less desirable plants would also occur during Treatment A due to concentrating livestock use. This would result in more use of these plants than now occurs, therefore, interfering more with the completion of normal life processes.

TABLE 8-32

PREDICTED AUM PRODUCTION ATTRIBUTED TO MANAGEMENT FOR ALTERNATIVE SIX, TOTAL AUM USE PROPOSED AND COMMITTED AND NET AUM DIFFERENCE AFTER 5 AND 15 YEARS

		Present Production	After 15 Years to be Achieved by Management	Total Production After 15 Years	Total AUMs Proposed & Committed	Net AUM Difference After 5 Years	Net AUM Difference After 15 Years
IMPLEMENT AMPs	1. Bald Mountain	1,084	1,384	2,468	1,237	206	1,231
	2. Bruno Creek	8	29	37	182	- 24	- 145
	3. Herd Creek	1,848	1,934	3,782	1,497	382	2,285
	4. San Felipe/Peck Canyon	5,316	3,298	8,614	5,416	534	3,198
	5. Squaw Creek	573	434	1,007	597	68	410
	Subtotal	8,829	7,079	15,908	8,929	1,166	6,979
IMPLEMENT MODIFIED AMPs 1/	6. Red Lake	1,006	1,578	2,584	2,656	- 12	- 72
	7. Road Creek	1,004	1,373	2,377	1,379	167	998
	8. Split Hoof	733	296	1,029	1,001	5	28
	9. Warm Springs	11,367	6,772	18,139	12,014	1,023	6,125
	Subtotal	14,110	10,019	24,129	17,050	1,183	7,079
SEASON OF USE/ AUM ADJUSTMENT	10. Round Valley	1,403	569	1,972	654	220	1,318
	11. Garden Creek	2,287	1,417	3,704	1,627	347	2,077
	12. Thompson Creek	196	138	334	231	17	103
	13. Spud Creek	523	141	664	698	- 6	- 34
	14. Sullivan Creek	122	95	217	174	7	43
	15. Pine Creek	447	100	547	324	37	223
	16. East Fork	1,925	84	2,009	1,092	153	917
	Subtotal	6,903	2,544	9,447	4,800	775	4,647
	Total	29,842	19,642	49,484	30,779	3,124	18,705

1/ The assumption was made that proposed reductions would be in effect for 15 years. If adequate forage would be produced, use as proposed in AMPs would be permitted after two grazing cycles. For purposes of the analysis it was assumed that after five years, vegetative responses would be approximately the same as the end of two cycles (six years).

In TABLE 8-33 the percentage of production potential which would be attained as a result of management after fifteen years is included for each allotment.

For the alternative an additional 19,642 AUMs would be produced at the end of fifteen years which would be an increase of 66%. Respective net AUM increases after five and fifteen years would be 3,124 and 18,705. Allotments in which there would be a net decrease of AUMs after five and fifteen years are Bruno Creek, Red Lake, and Spud Creek (TABLE 8-32).

Two of the allotments in which wavyleafed thelopody was positively identified would receive management as in the proposal and the impacts would be the same as in the proposal. One other location in the Warm Springs Allotment would be beneficially affected by the reduction in use proposed in this alternative because less intensive livestock use should enhance growing conditions for the plants. Monitoring measures for ET plants as detailed in Chapter 4 should result in an overall benefit if the alternative were to be implemented.

Unavoidable Adverse Impacts. Short-term, adverse impacts during Treatment A in the Red Lake, Road Creek, Split Hoof, and Warm Springs Allotments would not be avoided.

TABLE 8-33

RATINGS FOR EXTIMATING AUM PRODUCTION FOR ALTERNATIVE SIX

Rating Scale

B+ = 9
B = 6
B- = 3
N = 0
A- = -3
A = -6
A+ = -9

A = Adverse
B = Beneficial
N = No Change

Allotment	CARBOHYDRATE RESERVES AND PLANT VIGOR		SEED PRODUCED		SEED SHATTERING AND TRAMPLING		SEEDLING ESTABLISHMENT		LITTER ACCUMULATION Soil Fertility/Plant Growth		CONCENTRATING LIVESTOCK Plants Affected		SOIL COMPACTION Trampling		TOTAL NUMERICAL RATING = % Production 1/ Potential Realized	DIFFERENCE IN PRESENT PRODUCTION AND POTENTIAL	ADDITIONAL AUMs THAT WOULD BE PRODUCED IN 15 YEARS	PRESENT PRODUCTION	TOTAL AUMs PRODUCTION IN 15 YEARS
	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable					
Red Lake	B	B-	B	B-	B	B-	B+	B-	B	B-	B	A	B-	B-	54	2,923	1,578	1,006	2,584
Road Creek	B+	B-	B+	B-	B+	B-	B+	B-	B-	N	B+	A+	B-	B-	57	2,408	1,373	1,004	2,377
Split Hoof	B	B-	B	B-	N	N	B-	N	B	B-	B-	A-	B-	B-	36	822	296	733	1,029
Warm Springs - Area I	B+	B-	B+	B-	B	B-	B+	B-	B	B-	B	A	B-	B-	60	4,315	2,611	3,858	6,469
Warm Springs - Area II	B+	B-	B+	B-	B+	B-	B+	B-	B-	N	B+	A+	B-	B-	57	6,593	3,758	2,804	6,562
Warm Springs - Area III	A-	N	A-	N	B+	B-	N	N	B-	N	B	A	B-	B-	9	4,479	430	4,705	5,108
																21,576	10,019	14,110	24,129
Round Valley	B-	N	B-	N	N	N	B	B-	B	B-	N	N	B-	B-	30	1,895	569	1,403	1,972
Garden Creek	B-	N	B-	N	N	N	B	B-	B	B-	N	N	B-	B-	30	4,724	1,417	2,287	3,704
Thompson Creek	B	B-	B	B-	N	N	B	B-	B+	B	N	N	B+	B+	60	230	138	196	334
Spud Creek	B-	N	B-	N	N	N	B-	N	B-	N	N	N	B-	B-	18	782	141	523	664
Sullivan Creek	B-	N	B-	N	N	N	B-	N	B-	N	N	N	B-	B-	18	526	95	122	217
Pine Creek	B-	N	B-	N	N	N	B-	N	B-	N	N	N	B-	B-	18	558	100	447	547
East Fork	B-	N	B-	N	N	N	B-	N	N	N	N	N	N	N	9	928	84	1,925	2,009
																9,643	2,544	6,903	9,447

1/ Summation of plants palatable and unpalatable for livestock use. Refer to TABLE 3-5 for methodology.

IMPLEMENT FIVE AMPs-MODIFY FOUR AMPs-ADJUST USE ON SEVEN AREAS

Terrestrial Animals

For this alternative general impacts on wildlife would be the same for the San Felipe, Bruno Creek, Bald Mountain, Squaw Creek, and Herd Creek Allotments as for the proposed action described in Chapter 3, since these five allotments would have the proposed AMPs implemented. However, when compared with the average livestock use for the past six years, this alternative would result in the authorization of 100 additional AUMs for the San Felipe/Peck Canyon Allotment, 43 additional AUMs for Bald Mountain Allotment, 58 less AUMs for Bruno Creek Allotment, 104 less AUMs for Squaw Creek Allotment, and 187 less AUMs for the Herd Creek Allotment. These changes in present livestock use would result in the following impacts: (1) additional competition for forage and/or cover for deer, antelope, and sage grouse in the San Felipe Allotment, (2) additional competition for forage for deer and sage grouse in the Bald Mountain Allotment, (3) reduced competition for forage for deer in the Bruno Creek and Squaw Creek Allotments, and probably improved conditions for blue grouse in the stream bottoms, and (4) reduced competition for forage for deer and antelope and improved habitat conditions for both sage and blue grouse along stream bottoms and other moist areas in the Herd Creek Allotment.

The Warm Springs, Road Creek, Split Hoof (Maraffio and Woolley), and Red Lake AMPs would be implemented with livestock use to be authorized at the level of the past average six years' use. The impacts on wildlife from livestock grazing in these four allotments would be

essentially the same as those described in Chapter 3 for the proposed action, except for the Warm Springs Allotment. While the total AUMs authorized there would be the same as the average use over the past six years, the distribution of this use would be changed. There would be about 28% less use authorized in Area I of the Warm Springs Allotment which would result in increased forage being available to antelope during early spring and summer. Use in Area III would remain about the same as at present, but Area II would receive about 33% more use, which would increase competition for forage in spring with deer and antelope and would be slightly more adverse to sage grouse in this area.

Competition in early spring (fawning time) in Area III would continue between livestock and deer, antelope, and elk, where competition in the spring is already high. The estimated impact on these animals would be moderate.

General impacts that might be expected from competition for forage in the spring for deer, elk, and antelope are (1) possible mortality of a few deer or antelope from inadequate nutritious forage, (2) reduced survival of fawns or calves of deer, antelope, or elk, and (3) reduced reproduction of sage and blue grouse and possibly other small wildlife (amphibians, small birds, etc.) depending on wet meadows or riparian vegetation for their habitat.

In the Warm Springs, Road Creek, Split Hoof, and Red Lake Allotments the described impacts would occur during the first two grazing cycles. If vegetative and soil conditions became suitable after two grazing cycles, the district manager could authorize additional use

proposed in the AMP. If this were to occur, impacts for the next few years would then be essentially the same as described for the allotments in Chapter 3. Reduced competition between livestock and big game (deer, elk, and antelope) for forage after only two grazing cycles would be expected to be minimal. If additional livestock were not authorized after two grazing cycles, the general impacts described above would continue.

In the remaining allotments (Round Valley, Garden Creek, Thompson Creek, Spud Creek, Sullivan Creek, Pine Creek, and East Fork) grazing would occur every year in accordance with the schedule for this alternative. Modifications of present use would be as follows: (1) grazing in the Garden Creek Allotment would end on September 15--use is presently authorized until December 15; (2) Thompson Creek would have the same seasons but use would be reduced by 131 AUMs; (3) grazing would be delayed by four days in the spring (5/16 to 5/20) in the Spud Creek Allotment and grazing would be eliminated from 6/15 to 7/15; (4) grazing in the Sullivan Creek Allotment would begin on 5/20, instead of 5/1; (5) grazing in the Pine Creek Allotment would be prolonged four days in the spring (6/10 to 6/15); and (6) grazing would begin 20 days later in the East Fork Allotment in the spring (5/1 to 5/20) and the season would be reduced by one week in the fall (10/1 to 10/7, instead of 10/1 to 10/15). Impacts of these changes from present use would be generally as follows: (1) increased forage available for deer in the Garden Creek Allotment; (2) increased forage for deer in the Thompson Creek Allotment; (3) slightly less competition for forage in the spring for deer,

antelope, and sage grouse in the Spud Creek Allotment; (4) improved forage conditions for deer in early spring in the Sullivan Creek Allotment, and improved nesting conditions along the creek bottom for blue and sage grouse; (5) reduced competition for forage for deer, antelope, and bighorns in the early spring in the East Fork Allotment, and slightly less utilization of shrubs by cattle in the fall, leaving additional forage for deer and bighorns in winter.

The relative degrees of impact that livestock grazing would have on wildlife under this alternative are presented in TABLE 8-34, and the estimated change in habitat condition for the important game species is presented in TABLE 8-35. Estimated percentages of habitat change are in TABLE 8-36.

Wild Horses. Livestock numbers on the Warm Springs, Road Creek, Split Hoof and Red Lake Allotments would remain at the six-year average use level for the first two grazing cycles. Impacts from this action would be essentially the same as those described in the No Action Alternative except for range improvements which could tend to restrict movement of wild horses.

Aquatic Life

Existing habitat conditions and those estimated for fish-producing streams in the Challis Unit after fifteen years for Alternative 6 is as follows:

TABLE 8-34

RELATIVE DEGREE OF IMPACT THAT LIVESTOCK GRAZING WOULD HAVE ON VARIOUS TYPES OF WILDLIFE AND THEIR HABITAT FOR ALTERNATIVE SIX

Legend

1 = Low Impact 1/
2 = Moderate Impact
3 = High Impact
– = Little or No Impact
S = Spring
F = Fall

Allotment	Competition for Forage Between Livestock and Deer		Competition for Forage Between Livestock and Elk		Competition for Forage Between Livestock and Antelope		Competition for Forage Between Livestock and Bighorn Sheep		Competition for Forage Between Livestock and Small Mammals		Livestock Use of Wet Meadows, Stream Bottoms and Riparian Vegetation		Competition for Forage Cover with Conifer Dwelling Wildlife		Impact of Livestock on Nests of Ground and Shrub-Nesting Birds	
	S	F	S	F	S	F	S	F	S	F	S	F	S	F	S	F
San Felipe/Peck Canyon	2	3	–	–	2	2	–	–	1	1	2	2	–	–	1	–
Bruno Creek	2	2	–	–	–	–	–	–	1	1	1	1	2	1	1	1
Bald Mountain	2	2	1	1	1	1	–	–	1	1	2	2	2	2	1	1
Squaw Creek	1	1	–	–	–	–	–	–	1	1	2	2	–	–	1	–
Herd Creek	3	3	1	1	2	2	–	–	1	1	2	2	1	1	1	–
Warm Springs	3	3	2	3	2	2	–	–	2	2	3	3	1	1	2	1
Road Creek	1	1	–	–	1	1	1	3	1	1	2	2	1	1	1	–
Split Hoof	1	1	–	–	1	1	–	–	1	–	–	–	–	–	–	–
Red Lake	1	1	–	–	1	1	–	–	1	1	2	2	1	1	1	–
Round Valley	2	2	–	–	2	2	–	–	2	1	–	–	–	–	–	–
Garden Creek	3	2	–	–	2	3	1	3	2	1	3	3	1	1	1	1
Thompson Creek	1	–	–	–	–	–	–	–	1	–	2	–	–	–	1	–
Spud Creek	1	–	–	–	1	1	–	–	1	–	2	2	1	–	1	–
Sullivan Creek	2	1	–	–	–	–	–	–	2	1	1	1	–	–	–	–
East Fork	2	2	–	–	2	–	–	–	2	1	3	2	1	1	1	–
Pine Creek	2	2	–	–	–	–	–	–	2	2	3	2	1	1	1	–

1/ 1, 2, 3 refer to relative adverse impact.

TABLE 8-35

PRESENT CONDITION OF HABITAT FOR IMPORTANT GAME SPECIES IN THE CHALLIS PLANNING UNIT AND ESTIMATED CHANGE IN CONDITION THAT MIGHT OCCUR FOR ALTERNATIVE 6

	Habitat Condition (Acres)					
	1975			1990		
Species	Poor	Fair	Good	Poor	Fair	Good
Deer						
Winter Range	26,111	25,992	1,885	18,584	26,021	8,383
Elk						
Winter Range	228	1,206	543	171	962	844
Antelope						
Yearlong	22,105	25,323	8,694	15,474	24,357	16,291
Summer	6,272	13,408	6,932	4,390	11,268	10,954
Bighorn Sheep						
Winter Range	3,205	3,827	107	2,885	3,764	490
Sage Grouse						
Brooding/Nesting	8,516	5,679	0	5,535	6,672	1,988
Winter Habitat	0	913	2,713	0	593	3,033

TABLE 8-36

ESTIMATED PERCENTAGE OF HABITAT CHANGE UNITWIDE FOR IMPORTANT GAME SPECIES IF ALTERNATIVE 6 WERE TO BE IMPLEMENTED

Wildlife Species and Habitat Type	With Proposal	Alternative 6
Deer		
Winter range		
poor to fair	20%	25%
fair to good	20%	25%
Elk		
Winter range		
poor to fair	20%	25%
fair to good	20%	25%
Antelope		
Yearlong range		
poor to fair	25%	30%
fair to good	25%	30%
Summer range		
poor to fair	25%	30%
fair to good	25%	30%
Bighorn sheep		
Winter range		
poor to fair	40%	10%
fair to good	40%	10%
Sage grouse		
Brooding/Nesting		
poor to fair	35%	35%
fair to good	35%	35%
Winter range		
poor to fair	35%	35%
fair to good	35%	35%

	Habitat Condition					
	Existing Conditions (Miles)			Alternative 6 (Miles)		
	Good	Fair	Poor	Good	Fair	Poor
Anadromous and Resident Fish	15.5	13.1	4.4	15.5	16.1	1.4
Resident Fish Only	2.0	24.5	22.2	10.5	19.8	18.4
Totals	17.5	37.6	26.6	26.0	35.9	19.8
Percent ()	(21)	(46)	(33)	(32)	(44)	(24)

Compared to existing conditions, an estimated 15.3 miles (six streams) are expected to improve in habitat conditions if the alternative were to be implemented. Habitat conditions in those streams where AMPs would be implemented (nine allotments, including the four with the six-year average use level) are predicted to be similar as for the proposed action (refer to TABLE 3-8).

In the remaining seven use areas, Spud, French, and Thompson Creeks are expected to improve in condition. Other streams in the seven allotments would remain in the same condition as predicted for the proposed action.

Short-term impacts on fish habitat are expected to result in temporary loss of fish production in lower Herd Creek for approximately five years. Increased sedimentation from Spar Canyon Creek would also temporarily impact fish habitat in the lower East Fork and Salmon River, which could cause a decrease in fish production in places where sediments cover gravel-rubble areas. Fencing and water development projects in the

proposed allotments, the Bald Mountain chemical spray project and the chaining and seeding project in the Road Creek Allotment could have short-term impacts on fish habitat as discussed in Chapter 3 if Alternative 6 is implemented.

Long-term impacts on fish habitat would occur in upper Road Creek and several tributaries, which would result in a slight decrease in fish populations.

Little change in habitat conditions of Jimmy Smith Lake is anticipated. A slight improvement in habitat conditions of Herd Lake would be expected with this alternative.

Livestock Grazing. For five allotments, AMPs would be implemented which would result in a decrease of 206 AUMs below the six-year average levels of grazing use. In four allotments AUM use would remain the same as the six-year average licensed use. Season of use/AUM adjustment in the remaining seven allotments would result in a decrease of 130 AUMs below current levels. The overall effect of this alternative would be a decrease of 336 AUMs--an adverse impact. The long-term results of management would be more palatable and nutritious forage plants for livestock use. More intensive management would require livestock operators to move cattle more often and, in some cases, for longer distances.

Unavoidable Adverse Impacts. All of the adverse impacts identified above as a result of this alternative are considered unavoidable.

Visual Resources

Impacts of implementing the five AMPs as proposed would be the same as discussed under Visual Resources, Chapter 3, for the proposed action.

In the four allotments where use would be restricted to the six-year average for the first two grazing cycles, the same range improvements as included in the proposed action would be developed. Impacts as a result of these developments would be the same as discussed in Chapter 3. The impacts to visual resources as a result of animals grazing and the contrasts that develop between pasture treatments would not be as great as anticipated in the proposed action because less AUMs of forage would be removed, lessening the changes in vegetative composition and plant density. There would also be less potential soil movement since more vegetative cover would be retained.

In the remaining seven allotments no range improvements would be constructed, thus no impacts to the visual resources as a result of such actions would occur. The only exception would be if boundary fences for each allotment were required and constructed. If these fences were built the impacts as discussed in Chapter 3 would be expected. There would be no individual pastures established within the allotments, and the only visual contrasts that may develop from livestock grazing would be between areas of concentrated livestock use around water and non-concentration areas as would occur in the no action alternative. Refer to TABLE 8-37 for summarized impacts for the alternative.

TABLE 8-37

SUMMARY OF IMPACTS BY ALTERNATIVE

Resource	Proposed Action	Alternative 6
Visual	-	-
Recreation	+	+

Recreation Resources

The impacts to recreation resources and use opportunities for the five areas where AMPs would be implemented, would be the same as discussed in Chapter 3 for the proposed action.

The terrestrial wildlife habitat conditions in the four areas in which grazing would be restricted to the six-year average use would be similar to the no action alternative and the proposed action, but would reflect a slight overall improvement over present conditions if additional livestock were not authorized after two grazing cycles. In areas with season of use/AUM adjustments wildlife habitat would be moderately improved over the present conditions. This could result in improved opportunities to hunt and view terrestrial wildlife in these allotments.

In the seven areas where there would be season of use/AUM adjustments (TABLE 8-31) aquatic habitat would improve in Spud, French and Thompson Creeks, and opportunities to fish and view aquatic wildlife would be improved as compared to the present situation.

Since wild horses would be managed according to the proposed plan, opportunities to view these animals would be good.

Refer to TABLE 8-37 for summarized impacts for recreational resources for the alternative.

Cultural Resources

Impacts to cultural sites for Alternative 6 would be the same as stated in the proposed action (see Chapter 3, General Impacts to Cultural Resources).

Mitigation. The 37 National Register eligible cultural properties susceptible to damage would be protected by appropriate physical measures and/or 106/2(b) statement recommendations (assuming they are followed). Mitigation of adverse impacts to the remaining 140 known National Register ineligible cultural properties and to an unknown number of the estimated 750 unknown cultural properties would be the same as outlined in Chapter 4.

Unavoidable Adverse Impacts. Unavoidable adverse impacts to cultural properties as the result of livestock grazing would be the same as discussed in Chapter 5. Disturbance would continue to occur on 140 known and an unknown number of the estimated 750 unknown cultural properties for three years until the proposed cultural resource management activity plan outlined in Chapter 4 can be completed.

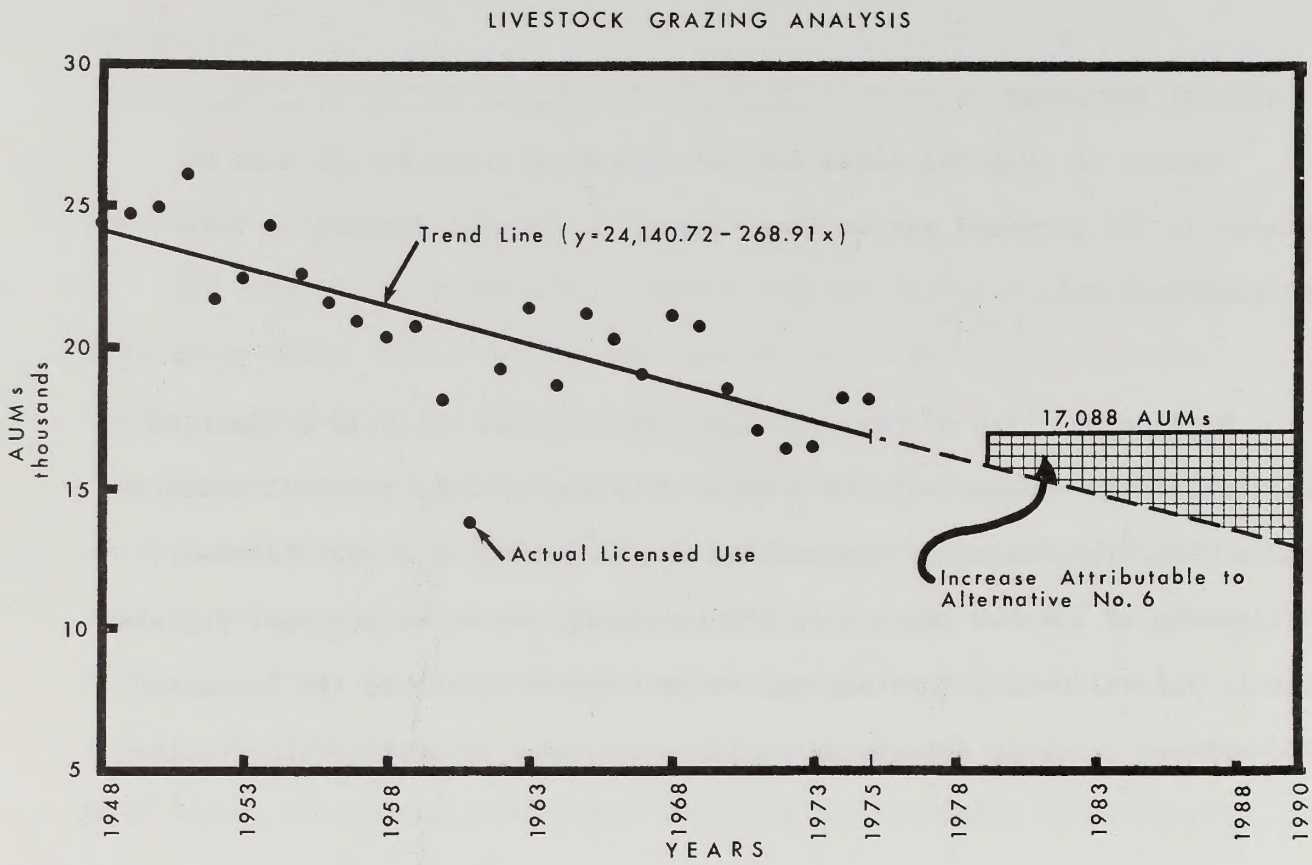


FIGURE 8-6 LIVESTOCK GRAZING ANALYSIS ALTERNATIVE NO. 6

Socio-economics

The AMPs which would be implemented in the first five allotments for the alternative (TABLE 8-31) would result in a decrease of 206 AUMs below the six-year average licensed grazing use. No change in the six-year average use in AMPs for four allotments. In the seven allotments in which there would be season of use/AUM adjustments, AUM use would decrease by 130. The overall result of the alternative would be a decrease of 336 AUMs grazing use in the unit (FIGURE 8-6). This would be considered to be a relatively minor adverse impact. As described in other sections of this statement, adverse impacts have not been determined or quantified for individual livestock operators.

The income effect of decreasing AUM use would be approximately $1,432 less annually (376 x $2.85 x 1.495 = $1,432) which would represent $21,480 less in a fifteen-year period. Compared to total income in the Challis area the impact would be quite minor.

It is predicted that property value would decrease by $28,000, and tax revenues would diminish $247 annually representing a loss of $4,100 for a fifteen-year period.

Unavoidable Adverse Impacts. All of adverse impacts described above, including those not quantified, would be unavoidable.

SUMMARY

Table 8-38 presents a summary of the impacts of the proposed action and the alternatives on major environmental elements involved in the Challis Unit.

TABLE 8-38

Predicted Influences of Proposed and Alternative Domestic Livestock Grazing Programs on Resources or Components in the Challis Unit 1/

Resource or Component	Present Situation	Proposed Action	Alternatives 1	2	3	4	5	6
Sediment Loss Tons/Year	226,463 2/	203,817	247,079	149,384	195,731	197,184	179,205	220,744
Vegetation								
Net Difference in AUM Availability After 15 Years		+12,346	-2,668	+40,316	+12,888	+31,239 3/	+13,086	+18,705
AUM Production After 15 Years	29,842	45,926	24,423	54,007	45,723	43,424 10/	45,864	49,484
Terrestrial Animals								
Wildlife-Acres of Habitat Condition								
Deer								
Winter Range								
Poor	26,111	20,889	31,309	18,278	20,889	13,839 4/	20,106	19,584
Fair	25,992	26,016	20,982	27,327	26,016	26,048	26,019	26,021
Good	1,885	7,083	1,697	8,383	7,083	14,101	7,863	8,383
Elk								
Winter Range								
Poor	228	182	409	127	182	178	182	171
Fair	1,206	1,011	1,079	945	784	991	1,011	962
Good	543	784	489	905	1,011	808	784	844
Antelope								
Yearlong Range								
Poor	22,105	16,579	27,170	11,053	15,473	14,368	14,368	15,474
Fair	25,323	24,518	21,128	21,181	24,358	24,197	24,197	24,357
Good	8,694	15,025	7,825	23,888	16,291	17,557	17,557	16,291

TABLE 8-38 (cont.)

Predicted Influences of Proposed and Alternative Domestic Livestock Grazing Programs on Resources or Components in the Challis Unit 1/ (cont.)

Resource or Component	Present Situation	Proposed Action	Alternatives 1	2	3	4	5	6
Summer Range								
Poor	6,272	4,704	8,283	3,136	4,391	4,077	4,077	4,390
Fair	13,408	11,624	12,090	8,499	11,267	10,910	10,910	11,268
Good	6,932	10,284	6,239	14,977	10,954	11,625	11,625	10,954
Bighorn Sheep Winter Range								
Poor	3,205	1,923	4,162	1,602	1,763	1,699	1,923	2,885
Fair	3,827	3,578	2,881	3,515	3,547	3,534	3,578	3,764
Good	107	1,638	96	2,022	1,829	1,906	1,638	490
Sage Grouse Brooding/Nesting Habitat								
Poor	8,516	5,536	9,936	2,555	5,110	4,684	4,684	5,535
Fair	5,679	6,671	4,259	7,665	6,813	6,955	6,955	6,672
Good	0	1,988	0	3,975	2,272	2,556	2,556	1,988
Winter Habitat								
Poor	0	0	183	0	0	0	0	0
Fair	913	593	1,273	502	593	593	593	593
Good	2,713	3,033	2,170	3,124	3,033	3,033	3,033	3,033
Wild Horses	410 5/	150-300 6/	150-300	150-300	150-300	150-300	150-300	150-300
Aquatic Environment Miles of Habitat by Condition Class Anadromous and Resident Fish								
Poor	4.4	1.4	4.4	0.0	1.4	0.2	1.4	1.4
Fair	13.1	16.1	14.1	10.5	16.1	16.0	16.1	16.1
Good	15.5	15.5	14.5	22.5	15.5	16.8	15.5	15.5

TABLE 8-38 (cont.)

Predicted Influences of Proposed and Alternative Domestic Livestock Grazing Programs on Resources or Components in the Challis Unit 1/ (cont.)

Resource or Component	Present Situation	Proposed Action	Alternatives 1	2	3	4	5	6
Resident Fish								
Poor	22.2	21.0	30.9	2.0	19.8	18.1	21.0	18.4
Fair	24.5	17.2	15.8	10.4	18.4	17.8	15.4	19.8
Good	2.0	10.5	2.0	36.3	10.5	12.8	12.3	10.5
Agriculture								
Farming								
Livestock Grazing								
AUM Use/Year	17,426	19,889	13,400 7/	0	19,549	18,009 3/	18,663	17,088
Forest Management								
MBF Annual Harvest	354	354	354	354	354	354	354	354
Visual Resources		- 8/	-	+	-	+	-	-
Recreation Resources	Not Rated	+	-	+++	+	++	++	+
Cultural Resources	---	--	--	++	--	--	--	--
Economics								
Income from livestock from Unit								
Annual 11/	$ 74,300	$ +17,800	$ -1,146	$ -74,248 9/	$ +9,046	$ +2,484 3/	$ +5,270	$ -1,432
Cumulative 15 Yrs.	Unknown	$+267,000	$-137,520 10/	$-1,113,720	$+135,690	$+37,260 3/	$+79,000	$-21,480
County Tax Revenues from Unit								
Annual	$ 14,200	$ +2,000	$ -2,846	$ -14,230 9/	$ +1,735 9/	$ +476 3,12/	$ +1,009	$ -274 9/
Cumulative	Unknown	$ +30,000	$ -26,362	$ -213,450	$ +26,025	$ +7,140 3,12/	$+15,141	$ -4,110
Ranch Values in Unit	$1,450,000 13/		$-290,416	$-1,452,000 2/	$+177,000	$+48,580 3,12/	$+103,000	$-28,000

TABLE 8-38 (cont.)

Predicted Influences of Proposed and Alternative Domestic Livestock Grazing Programs on Resources or Components in the Challis Unit 1/ (cont.)

1/ Unless indicated otherwise estimates are indicated for conditions 15 years after implementation of the management program.

2/ Entries in this column are for present conditions and are not projected for the future.

3/ Assumed that the alternative would continue in effect after the first five years.

4/ Entries for wildlife for Alternative 4 are for conditions at the end of five years.

5/ Presently there are 407 wild horses and 3 burros in the Unit.

6/ It is assumed that horse numbers would be reduced as prescribed in the Challis wild horse management proposal.

7/ Wild horse management proposal.

8/ For the semi-quantitative assessment ---<--<N.C. < + < ++ < +++ (Two "+s" don't indicate twice as much impact as one "+", only that "++" is greater than "+") N.C. - No change - = Adverse, + = Beneficial.

9/ Estimated annual revenues beginning immediately after implementation of the alternative.

10/ Compounded, i.e., $1,146 in Year 1, $2,292 in Year 2 --- summed = $137,520.

11/ Income to Challis economy attributed to the livestock industry. Actually, if AUM use is lessened, weight gains could increase resulting in the same number of pounds of beef for market.

12/ If the alternative were to continue to be exercised after the initial five years values would have increased $48,580 and tax revenue would be increased $476 or $7,140 for 15 years.

13/ Contribution of NRL grazing to Ranch Values.

CHAPTER 9

CONSULTATION AND COORDINATION

In this chapter the organization of the team to prepare the environmental impact statement (EIS), agency contacts, significant meetings, and a list of organizations that will receive a copy of the draft EIS with a request to submit written comments are addressed. Written comments from all other interested parties will also be considered.

ORGANIZATION OF TEAM FOR PREPARATION OF THE DRAFT EIS

On August 11, 1975, the team assembled in Challis, Idaho, to begin preparing this EIS. The team consisted of resource specialists from the Bureau of Land Management (BLM) Denver Service Center, BLM Oregon State Office, BLM Idaho State Office, and BLM Salmon District Office. Team members included a range specialist, forestry specialist, fisheries biologist, wildlife biologist, archaeologist, recreation specialist, wild horse specialist, watershed specialist, soil specialist, land specialist, minerals specialist, socioeconomist, and contract writer-editor. Periodic review was provided by the BLM staff in the Washington Office, the Denver Service Center, and the Department of the Interior.

CONSULTATION AND COORDINATION IN PREPARATION OF THE DRAFT EIS

During preparation of the Draft the State Historic Preservation Officer was contacted. Consultations at a working level with Departmental

and other federal and state agencies with special expertise relating to the proposed action were used to gain information and close data gaps.

On August 21, 1975, a news article was placed in the Challis Messenger, Challis, Idaho, in which input for the Challis EIS was requested.

In addition, on August 27, 1975, the BLM Idaho State Office sent a letter requesting input to the following individuals and organizations:

Organizations and Individuals Interested in Wild Horses - seven (7)
Salmon BLM District Advisory Board - nine (9) members
Idaho Stockmans Organizations - two (2) organizations
Other Federal Agencies - four (4)
State Agencies - three (3)
City and County Government - seven (7)
Conservation Groups - six (6)
Congressmen and Senators - six (6)
Challis Residents - fifteen (15)
Mackay Residents - one (1)
Individuals Who Participated in Challis MFP - six (6)
Challis Planning Unit Grazing Permittees - thirty-eight (38)

The following individuals responded in writing to the August 27, 1975, letter from the BLM Idaho State Office:

1. Challis Chamber of Commerce
   Ted C. Springer

   Comments: Offered to participate in preparation of the Socio-economic portion of the EIS and suggested that the EIS team conduct public meetings for the Challis community during preparation of the EIS rather than waiting until the Draft is made public.

2. Idaho Environmental Council
   Gerald A. Jayne

   Comments: Made no specific comments to preparation of the Draft EIS but referred to his letters of November 3, 1973, and May 19, 1974, commenting on the management framework plan for the Challis Unit.

3. Idaho Board of Realtors
   Beula Rood, Challis, Idaho

Comments: Suggested that the Challis Unit was selected as the pilot area because there has been so much adverse publicity nationwide, in the press, on the radio and TV. Also suggested that the livestock industry is not receiving as much consideration as wildlife and wild horses.

4. Elizabeth Powers
Leadore, Idaho

Comments: Made comments on several of the resources in the Challis Unit. "Wild horses will have to be controlled very severely or the situation will get out of hand very rapidly." There will be competition for feed between horses and domestic livestock and disease could be a problem. "Permittees whose livelihood depends upon their grazing rights should receive every consideration. Those areas having archeological sites should certainly be protected as there is no way to reestablish these areas once they are destroyed."

5. Betty Corrigan
Challis, Idaho

Comments: Offered to serve on a board and participate in meetings during preparation of the EIS. Offered to read any portion of the EIS already formulated and make written comments.

6. Challis National Forest
William R. Paddock, Jr., Acting Forest Supervisor

Comments: Offered to review allotment management plans that are adjacent to the Forest. "We will need to carefully evaluate impacts (if any) directed to our lands as a result of specific decisions in your allotment management plans."

7. Argonne Lapidary and Geological Society
Sandra Monnie, Idaho Falls, Idaho

Comments: Made comments "derived from questioning rockhounds, hunters, fishermen, and some ranchers/horsemen, in the Idaho Falls-Iona-Ririe area." The upper end of Road Creek and Lower Horse Basin have been greatly damaged by wild horses. "There is a big conflict between wild horses and livestock grazing in the Spar Canyon-Lone Pine Road areas." Livestock grazing should be limited along with some reduction of the wild horse herd. "Areas where the bighorn sheep are should be reserved for the sheep as much as practical." Livestock have done damage to streams by "polluting the water, breaking down the banks and trampling what vegetation there is into a big muck. We are against sagebrush control to provide more grazing acreage for livestock in the deer, antelope and upland game bird areas, where sagebrush is necessary for their survival. Livestock grazing should be prohibited in areas where there

are archeological sites presently known, and at present, withheld in areas where there's a good possibility of future archeological sites to be discovered. We do realize that ranchers should be considered also" and in areas where there is a lack of forage reseeding should be considered when it is not detrimental to wildlife and possible recreation sites.

8. Department of the Army
Walla Walla District, Corps of Engineers
W. E. Sivley, Chief Engineering Division

Comments: Concerning watershed management for flood control they suggested that BLM contact the Department of Agriculture. Because the proposal does not affect any major Corps' functions they have no additional information to supply for the EIS.

9. Dr. Robert W. Jones
Associate Professor of Geology, College of Mines
University of Idaho

Comments: The letter sent to Idaho Bureau of Mines was referred to Mr. Jones. He suggested that any parts of the Challis Unit underlain by "Germer Tuffaceous Member" should be investigated as potential fragile lands.

10. U. S. Forest Service Sawtooth NRA
Gray F. Reynolds

Comments: Suggested BLM review the SNRA General Management Plan and EIS for resource coordination opportunities along the East Fork of the Salmon River. Provided a list of SNRA personnel that BLM could contact.

11. State of Idaho Department of Fish and Game
Tom Reinecker

Comments: Stated that the Challis area provides winter habitat for large populations of deer (4,000), antelope (600), elk (300) and bighorn sheep (70). "Proper range and population management can increase these populations." The East Fork of the Salmon River is one of the most productive salmon spawning streams in the Salmon River drainage. Average annual salmon redd counts indicate 567 redds in the East Fork.

12. National Wild Horse and Burro Advisory Board
Floyd W. Frank, Chairman

Comments: In his letter, among other things, stated that "My concern is that in developing AMPs, the allotments for horses be in keeping with the provision in the Act which charges the Secretaries with achieving and maintaining a thriving natural ecological balance on the public lands."

13. Geological Survey Water Resources Division
Hal K. Hall, Boise, Idaho

Comments: In his letter, stated that they could furnish hydrologic data, daily streamflow data for the the Main Salmon and East Fork, provide assessments of runoff, and assessments of ground-water availability.

14. Fish and Wildlife Service
Richard J. Fisher, Field Supervisor
Boise, Idaho

Comments: Many wildlife species have yearly home ranges that extend far beyond the boundaries of individual management units. "Thus, the entire ecosystem being impacted by a proposed action should be identified and the impact assessed. Consideration should be given to endangered and threatened plant and animals. The impact of grazing on salmon and steelhead in the two major streams should be discussed. If management includes spraying to control shrub vegetation, the effects and potential hazards should be described."

15. State of Idaho
Office of the Governor
R. J. Bruning, Special Assistant

Comments: He expressed concern for the economic importance of the livestock industry in the Challis area and special concern for the small livestock operators. Rest-rotation grazing can be a tool to provide range improvements for livestock, wildlife, fisheries and water quality. "The purpose of this study should be to establish guidelines that will protect and enhance the multiple uses of National Resource Lands that are being used for grazing."

The following provided written comment concerning preparation of the Draft EIS.

1. Natural Resources Defense Council
Johanna H. Wald

Comments: Offered some specific suggestions concerning the proposed EIS outline and the contents of the EIS itself. Provided an outline setting forth some specific issues concerning the management of grazing in relation to particular wildlife resources of the Challis Area.

2. International Society for the Protection of Mustangs and Burros
Velma B. Johnston, President

Comments: Stated that where reductions of wild horse numbers are planned, there should also be a proportionate reduction in all grazing pressures. Wild horses should "be given consideration as an integral part of the natural system of the public lands, and not be made sacrifices to accommodate private profit-producing operations."

3. Wyoming Wildlife Federation
John C. Borzea, BLM Activities Committee

Comments: The EIS should include a careful determination of the proper role of grazing in the management of the other resources. The EIS should consider the adequacy of the management framework plan and "must discuss specific management practices for particular grazing areas as alternatives to the specific practices proposed."

4. State of Montana, Department of Fish and Game
Wynn G. Freeman, Game Management Division

Comments: Suggested that Gus Hormay's "Principles of Rest-Rotation Grazing" be considered and that the EIS staff avail itself of Mr. Hormay's services.

5. Natural Resources Defense Council
Roger Beers and William R. Meiners

Comments: Felt that the BLM was failing to allow sufficient time for preparation of the Draft EIS and collection of resource data. Suggested that no hearings be held on the Draft to allow more time for preparation and data collection and that hearings be held on the final version. To facilitate preparation of adequate future EISs, the BLM should reconsider its decision to prepare EISs on AMPs and consider preparing EISs on the management framework plans.

6. The Wilderness Society
Dan Lechefsky, Field Consultant

Comments: The Challis EIS on the allotment management plans "must of necessity also clearly address other facets of the Management Framework Plan (MFP). Failure to do so will render the EIS inadequate since, as my personal observations of BLM plannning in Nevada have shown, decisions made in the latter stages of MFP preparation traditionally are dictated by management objectives originating in the AMPs." Also, alternatives to the proposed AMPs and economics should be considered in the EIS.

7. Defenders of Outdoor Heritage
Kent Gregersen

Comments: Since he did not have knowledge of the Challis Unit, his comments were limited to a general, overall trend on livestock grazing on the public lands. A number of areas are in poor condition caused by overgrazing in the past. Total elimination of grazing on public land is not necessary, but redistribution of AUMs is now in order to provide for various animals.

8. Sierra Club
Office of the Northwest Representative
Linda M. B. Haverfield

Comments: Since the EIS is not being done on the MFP, the MFP needs to reflect the changes as they occur in the AMPs. As new data is accumulated, it should become a part of the MFP document. Due to the age of the last range survey, further resource inventory would be desirable before the final EIS is done. Economics and the question of whether or not livestock grazing is a viable use need to be addressed. An inventory of wildlife population should be done and the potential for expanding the fisheries resource needs to be examined. "An inventory of the roadless areas should be included in the EIS. One known area which ought to be studied is the land contiguous to the Challis National Forest's Herd Peak Inventoried Roadless Area." The EIS should discuss a program for monitoring the conditions in the new pastures.

9. Arizona Wildlife Federation
Steve Bingham, Chairman BLM Lands Committee

Comments: The EIS should be an objective, comprehensive analysis of the resources in the Challis Unit "and not a generalized statement similar to BLM's EIS on Grazing on National Resource Lands."

10. Associated Students, University of Oregon
Survival Center
Lee C. Balsiger, EIS Coordinator

Comments: Concerned about the quality of the EIS and hope quality will not be sacrificed. Alternatives should be considered to the proposed AMPs.

11. Salmon District BLM Advisory Board
Lawrence Bradbury, Chairman

Comments: Advice was provided about approaches for the EIS.

In addition to the consultation noted above, a wide variety of information was obtained through numerous informal contacts with agencies, individuals and groups. Although useful, generally the information gained was small, therefore, no effort will be made here to document each contact.

The Advisory Council on Historic Preservation was not contacted during preparation of the Draft, but they will be given the opportunity to comment on the Draft.

Consultation and coordination efforts will continue with agencies, groups and individuals during the development of the Final Statement.

During preparation, the Draft EIS was discussed at several meetings:

Range Users meeting in Challis; July 21, 1975; attended by BLM personnel from Washington, Idaho State, Salmon District and 40 range users.

Tri-County Cattlemen's meeting; August 27, 1975; attended by BLM personnel from Washington, Salmon District, Idaho Cattlemen's Association and 35 range users.

Lemhi Cattle & Horse Association meeting; September 26, 1975; attended by Salmon District BLM personnel, Idaho Cattlemen's Association and 41 Lemhi cattlemen.

Salmon BLM District Advisory Board meeting; November 6, 1975; BLM personnel from Idaho State Office, Salmon District and eight board members.

Lemhi Cattle & Horse Association meeting; November 8, 1975; Salmon District BLM personnel and 30 Lemhi cattlemen.

Tri-County Cattlemen's meeting; November 15, 1975; attended by Salmon District BLM personnel, Idaho Cattlemen's Association and 40 range users.

Idaho Cattlemen's Association Annual Convention; November 21, 1975; BLM personnel from Idaho State Office, Salmon District and Idaho cattlemen.

Five Grazing Association meetings (Challis-MacKay Resource Area); February and March 1976; Salmon District BLM personnel, Challis Forest, 40 range users.

Women Opposed to Official Depression (WOOD) meeting; February 24, 1976; attended by Salmon District BLM personnel, 15 WOOD members and 12 others.

It was evident at the beginning that the BLM lacked certain information basic to preparing an EIS on the Challis Planning Unit. The following studies were conducted to gather the necessary information:

Raptoral Survey; Stephen William Platt, Ph.D. candidate, Brigham Young University.

Stream Survey; University of Idaho, Fred W. Rabe, Ph.D., Associate Professor; Stephen B. Bauer, M.S.; Kerry R. Foresman, M.S.

Archaeological Inventory; B. Robert Butler, Associate Professor of Anthropology, Idaho State University and Curator of Archaeology for Idaho State University Museum.

Rare and Endangered Plants; Dr. Karl Holte, Associate Professor, Idaho State University.

Bighorn Sheep (East Fork); University of Idaho, Dr. James Peek, Associate Professor and Jerry Lauer, Research Assistant.

Range Animal Food Habits; Dr. Richard M. Hansen, Professor, Colorado State University.

Socioeconomics; Boise State University, Lawrence D. Irvin, Assistant to the Director and Paul Werner, Graduate Research Assistant.

Evaluation of Sediment Yields Within Challis Unit; USDI Geological Survey, Harold R. Seitz.

COORDINATION IN THE REVIEW OF THE DRAFT ENVIRONMENTAL STATEMENT

Comments on the draft environmental statement will be requested from the following agencies and interest groups:

DEPARTMENT OF AGRICULTURE

Forest Service
Soil Conservation Service

ENVIRONMENTAL PROTECTION AGENCY

DEPARTMENT OF THE INTERIOR

U.S. Fish and Wildlife Service
Bureau of Reclamation
Bureau of Outdoor Recreation
U. S. Geological Survey
Bureau of Mines
National Park Service

ADVISORY COUNCIL ON HISTORIC PRESERVATION

IDAHO STATE CLEARINGHOUSE

OTHER STATE AGENCIES

Office of the Governor
Fish and Game Department
Department of Health and Welfare, Office of Environmental Services
Department of Transportation, Office of Environmental and Corridor Planning
Department of Lands
University of Idaho, Cooperative Extension Service
Department of Water Resources
State Historical Society, Archaeologist

LOCAL GOVERNMENT

Custer County Commissioners
Challis Chamber of Commerce
Custer County Planning and Zoning Commission
Mayor of Challis

CONSERVATION ORGANIZATIONS

Sierra Club
Wildlife Management Institute
Natural Resources Defense Council
Fund for Animals
National Council of Public Lands
Wilderness Society
Ada County Fish and Game League
Idaho Environmental Council
Wildlife Federation
Friends of the Earth

LIVESTOCK ORGANIZATIONS

Idaho Cattlemen's Association
Idaho Woolgrower's Association
Tri-County Cattlemen's Association
Lemhi County Cattlemen's Association

OTHER ORGANIZATIONS

Society for Range Management
Women Opposed to Official Depression (WOOD)
Lemhi Soil Conservation District
Custer Soil Conservation District
Council for Agricultural Science and Technology (CAST)

Prior to circulation of the draft, the following agencies were requested to review a working copy and provide preliminary comments which were considered when the official document was completed:

National Park Service
Forest Service
Bureau of Outdoor Recreation
Geological Survey
Fish and Wildlife Service

Public hearings will be held on the Draft EIS in Challis, Idaho and Boise, Idaho.

GLOSSARY FOR WORDS AND PHRASES

Aesthetics - Dealing with the nature of the beautiful and with judgments concerning beauty.

Adjustments in Numbers - Change (increase or decrease) of livestock numbers to conform to the amount of forage produced in an area considering other multiple uses.

Adventitious Growth - Vegetative growth originating from plant parts not normally producing growth.

Agate - Broadly, a rock form consisting of a mixture of cryptocriptalline and hydrated silica in variegated bands of mixture.

Allotment - An area of land where one or more individuals graze their livestock. It generally consists of national resource lands but may include parcels of private or state owned lands. The number of livestock and season of use are stipulated for each allotment. An allotment may consist of several pastures or be only one pasture.

Allotment Management Plan (AMP) - A concisely written program of livestock grazing management, including supportive measures, if required, designed to attain specific management goals in a grazing allotment.

Anadromous - Refers to fishes born in fresh water that migrate as juveniles to the ocean where they grow to maturity and return to fresh water to spawn.

Animal Unit Month (AUM) - The amount of forage required to sustain the equivalent of one cow or five sheep for one month.

Aquifer - A water-bearing bed or stratum of permeable rock, sand, or gravel capable of yielding considerable quantities of water.

Aspect - The orientation of a slope in respect to the compass; a position facing or fronting a particular direction.

Back-Country - Areas which are essentially roadless. Effects of man may be present, but are inconspicuous or unobtrusive.

Band - One or more stallions or jacks and their mares and jennies.

Basalt - A fine-grained dark colored igneous rock of extrusive origin.

Benthic - A term referring to the bottom of a stream or lake.

Benthos - Bottom-dwelling organisms.

Big Game Hunting Stage - The Big Game Hunter represented in the Western sites are broken into three sequent groups and are given culture names. The earliest is called the Clovis (Llano), next comes the Folsom and the latest is the Plano. The time range of this specialized hunter stage extends from perhaps 15,000 to 5000-4000 B.C.

Browse - As a verb, to consume, or feed or eat on (a plant); as a noun, the tender shoots, twigs, and leaves of trees and shrubs often used as food by cattle, deer, elk and other animals.

Carnivorous - Flesh-eating.

Carrying capacity - A maximum number of animals that can survive on a land area over a long term.

Catchment - A structure built to retain water from an upstream drainage area.

Cenozoic Era - Usually regarded as about 70 million years of age.

Changing Season of Use - Adjusting the time of livestock grazing on a range area based on type of vegetation or stage of vegetation growth.

Class of Livestock - Kinds of domestic livestock grazing on a range--cattle, horses, sheep or goats, or a combination of these. May be broken down to greater detail such as cows with calves, yearlings, steers, ewes, ewes with lambs, lambs, etc.

Climax - The final vegetative community which emerges after a series of successive vegetational stages and perpetuates itself indefinitely unless disturbed by outside forces.

The Clovis Culture - The Clovis (Llano) Culture is represented by distinctive lanceolate points which are thin, three to six inches long and have one or more short flakes removed from the base down toward the median portion toward the tip. Clovis points are always associated (but not exclusively) with mammoth kills.

Community - An aggregate of organisms which form a distinct ecological unit. Such a unit may be defined in terms of plants, animals or both.

Critical Wildlife Habitat - That portion of the living area of a wildlife species that is essential to the survival and perpetuation of the species either as individuals or as a population.

Cultural Resources - A term that included resources of historical, archaeological or architectural significance which are fragile, limited, and non-renewable portions of the human environment.

Cultural Stage - The term "culture" usually refers to single technologies or assemblages reflecting a similar economic adjustment shared by a large number of social groups. In "stage" there is an additional connotation of sequence and ranking of cultures by level or complexity toward some terminal or final level.

Deferment - Withholding of livestock grazing until a certain stage of plant growth is reached, usually maturity of seed.

Deglacial Hemicyclic Climate - An aggregate of organisms which form a distinct ecological unit. Such a unit may be defined in terms of plants, animals, or both.

Distribution - The uniformity of livestock grazing use over a range area. It is affected by water availability, topography and type and palatability of vegetative species.

Dolomite - A carbonate of calcium and magnesium, $CaMg(CO_3)_2$. A very common massive sedimentary rock occurrence of many colors and textures.

Ecology - A study of animals and plants in their relation to each other and to their environment.

Ecosystem - Complex self-sustaining natural system which includes living and non-living components of the environment and the interactions that bind them together. Its functioning involves the circulation of matter and energy between organisms and their environment.

Ecosystem Components - The animals, vegetation, soil, water, minerals, solar energy and their interactions as an ecological community.

Environment - The surrounding conditions, influences or forces that affect or modify an organism or an ecological community and ultimately determine its form and survival.

Escapement - Those fish which are not caught by fisheries and spawn to perpetuate the species. A term commonly used to describe numbers of spawning salmon and steelhead.

Eutrophication - The accumulation and retention of nutrients by aquatic ecosystems to the stage where vegetative decay exceeds the available oxygen supply.

Fauna - The animals of a particular period or region taken collectively.

Fledged - The maturing of young birds in the nest to the point where they are capable of flying and leaving the nest to fend for themselves.

Fingerling - A term used to describe young fish between two and four inches in length that are larger and older than fry.

Fluorspar - A natural calcium fluoride, CaF_2. The mineral is used as a flux in smeltering and in manufacture of hydrofluoric acid.

The Folsom Culture - The Folsom Culture is represented by a distinctive lanceolate point which is made with delicate, pressure-flaked retouch and is thinned by the removal on each face of one long, thin flake almost to the tip. Folsom points are always associated (but not exclusively) with the remains of one or another of the large-horned extinct bison.

Forb - A broadleaved herb, a weed.

Frail Lands - Some areas which exhibit low productivity and stability. Surface disturbance readily accelerates erosion of these areas.

Frequency of Use - An expression of the periods of grazing use and non-use describing how often and for how long grazing occurs.

Fry - Young, recently hatched fish one and one-half to two inches in length that are weak swimmers.

Geological Erosion - The normal or natural erosion caused by geological processes acting over geologic periods and resulting in the wearing away of mountains, the building up of floodplains, coastal plains, etc.

Grazing District - An administrative subdivision of the rangelands under the jurisdiction of the Bureau of Land Management, established pursuant to the Taylor Grazing Act of June 28, 1934. Section 3 lands are those national resource lands within a grazing district boundary pursuant to Section 3 of the Act.

Section 15 lands are those national resource lands outside a grazing district boundary pursuant to Section 15 of the Act.

Grazing System - A systematic sequence of grazing use and non-use of an allotment to reach identified multiple-use goals or objectives by improving the quality and quantity of the vegetation.

Habitat - A specific set of physical conditions that surround the single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover and living space.

Herbivore - A plant-eating animal.

Herd - All horses and burros in a given area or management unit.

Historic Resources - Sites, districts, structures, objects or other evidences of human activities that represent facets of the history of the nation, state or locality; places where significant historical or unusual events occurred even though no evidence of the event remains, or places associated with a personality important in history.

Humus - Accumulated debris of plant stems, leaves and roots forming the organic material in soils.

Infiltration - The flow of a liquid into a substance through pores or other openings, connoting flow into a soil in contradistinction to the word percolation which connotes flow through a porous substance.

Insectivorous - Insect eating.

Intensity of Use - Amount of vegetation consumed by grazing herbivores, usually measured as a percentage of the annual growth.

Invader - A plant species that was absent in the undisturbed portions of the original vegetation but will become established therein under conditions of disturbance or continued overuse.

Invertebrate - An animal without a backbone. This group includes such animals as insects, clams, snails, worms and others.

Isohyetal Map - Shows lines of mean annual precipitation based on climatological and hydrologic data correlated with topographic and physiographic factors.

Lay-Down Panel - Fencing constructed so that sections can be lowered from the vertical position when not needed to prevent snow damage or permit passage of wildlife species.

Lease - An authorization permitting the use of national resource lands outside of a grazing district for the grazing of livestock during a specified period of time.

License - An authorization which permits the grazing of a specified number and class of livestock on a designated area of grazing district lands for a period of time, usually not in excess of one year.

Livestock Operation - The management of an area of land so that a significant portion of the income is derived from the continuing production of livestock.

Lagomorph - Rabbits.

Management Framework Plan (MFP) - Land use plan for national resource lands which provides a set of goals, objectives and constraints for a specific planning area to guide the development of detailed plans for the management of each resource.

Marker Band - A band of horses or burros chosen for its unique characteristics and easy identification for use in determining movement, stability, home ranges, etc.

Microclimate - The local climate of a given site or habitat of variable size.

Moisture Infiltration - Water penetration into the soil through pores of the soil. Rate and amount of infiltration is limited by size and abundance of pores and water absorption capability of the soil.

Molybdenum - A silvery white, very hard metallic element. Used widely as an alloying agent to increase hardness and strength of quenched and tempered steel. Also it is used in nickel-based alloys for heat and corrosion resistance.

Multi-Discipline Team - A group of persons who collectively have expertise on all aspects or components of a project or problem to be studied and/or solved.

Multiple Use - Harmonious and coordinated management of the various surface and subsurface resources, without impairment of the land, that will best meet the present and future needs of the people.

National Register - The National Register of Historic Places, which is a register of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology and culture maintained by the Secretary of the Interior.

National Register Property - Means a district, site, building structure or object included in The National Register.

Naturalistic Landscape - A situation where the basic elements (form, line, color and texture) are displayed in composition that appears natural within the surrounding area or character type.

Nocturnal - Active during nighttime hours.

Off-Road Vehicle (ORV) - Any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland or other terrain.

Opal - A mineral composed of amorphous hydrous silica deposited from silica-bearing waters at low temperatures. It sometimes shows a play of colors, or opalescence and is known as fire opal.

Overgrazing - Consumption of vegetation by herbivores beyond the endurance of a plant to survive.

Parent Material - The unconsolidated and more-or-less chemically weathered mineral or organic matter from which soil develops.

Paleozoic - One of the major eras of geologic time, lasting about 400 million years and believed to have begun at about the beginning of life on earth.

Pasture - As used in this document, a pasture is a subdivision of a grazing allotment on national resource lands. For example, this allotment is divided into three pastures.

Percent Canopy Average -The percent of the total ground surface covered by the canopies of a single plant species or of several plant species.

Percent Frequency - The percentage of the plots along a transect in a range survey in which a particular species occurs.

Percolation, Soil-Water - The downward movement off water through soil, especially the downward flow of water in saturated or nearly saturated soil at hydraulic gradients of the order of 1.0 or less.

Permeability - Capacity for transmitting a fluid. It is measured by the rate at which a fluid of standard viscosity can move through material in a given interval of time under a given hydraulic gradient.

Permit - An authorization which allows the grazing of a specific number and class of livestock on a designated area of grazing district lands during specified seasons each year for a period of usually ten years.

Pleistocene Epoch - The Pleistocene Epoch of the Quaternary Geologic Period, more familiarly known as the Ice Age, is generally considered to cover the last one million years. The Recent or Modern era is regarded by some as merely an interval in a Pleistocene era not yet ended.

Phenological Needs of Plants - Requirements of vegetation to survive, the need to manufacture food, to replenish food reserves, to produce viable seed, and to have new seedlings become established.

Phenoxy Chemical - A compound containing the univalent radical $C_6H_5(-)$, an acid common to herbicides such as 2, 4-D; 2, 4, 5-T and silvex. As hormonal-type herbicides, they stimulate natural plant hormones and cause uncoordinated growth, accelerated metabolism and eventual death of the plant.

Pinedale Glacial Period - The last episode of major glaciation in the Rocky Mountains which ended about 7,000 years ago.

Plano Culture - The Plano Culture is characterized by a number of projectile points or knife blades showing a considerable variety of form, although the fine flintwork and the generally lanceolate form of the Clovis and Folsom persist. However, the fluting is entirely lost as Folsom disappears. The faunal association is either modern species, or an overlap of extinct and modern species.

Plant Density - The number of individuals per unit of area. Refers to the relative closeness of individuals to one another.

Plant Growth Requirements - Similar to physiological needs of plants but more specific; pertains to requirements of soil for rooting, water, minerals, light and air.

Plant Vigor - The relative well being and health of a plant as reflected by its ability to manufacture sufficient food for growth and maintenance.

Predator - An animal that preys on one or more other animals that man wished to preserve for his own use.

Programmatic Statement - A comprehensive and general statement resulting from an analysis of the adverse and beneficial impacts on the environment as it is being affected by an ongoing management program.

Public Land Law Review Commission (PLLRC) - The Commission established by Public Law 88-606 on September 19, 1964, to study existing laws and procedures relating to the administration of the public lands of the United States.

Public Participation - A component of the Bureau Planning System providing the opportunity for citizens as individuals or groups to review resource management proposals and offer their suggestions or criticisms of the various alternatives offered.

Range Adjudication - The allocation of grazing allotments, season of use, numbers and class of livestock to qualified livestock operators.

Range Condition and Trend - A description of the current status and estimated future improvement or deterioration of the vegetation and soil.

Raptors - An order of birds including all birds of prey such as the eagle, hawk, owl and vulture.

Range Improvement - A structure, action or practice that increases forage production, improves watershed and range condition or facilitates management of the range or the livestock grazing thereon.

Recreation Opportunities (Activities) - A general categorization of leisure type pursuits which occur in the outdoors.

Recreation Resources - Any natural resource or feature that contributes to a recreation experience.

Redd - That area of a gravel riffle where a female salmon or trout digs a hole with her tail, deposits eggs and subsequently covers them with gravel forming a "nest" in which the embryos develop and hatch.

Rest - As used in this statement, refers to deferment of grazing on a range area to allow plants to replenish their food reserves.

Rhyolite - A fine grained, usually light colored and sometimes glassy igneous rock, occurring as lava flows or as minor intrusions, and generally containing small phenocrysts of quartz and alkali feldspar.

Riparian - Situated on or pertaining to the bank of a river, stream, or other body of water. Normally used to refer to the plants of all types that grow along streams, around springs, etc.

Rotation - A grazing system providing for sequential movement of livestock from one pasture to another on the basis of allowing for regrowth of vegetation and maintenance of vegetative vigor.

Salmonid - A term referring to salmon and trout because they are the most important members of the taxonomic family "Salmonidae."

Sediment - The relatively fine material that settles to the bottom of a waterway. Material less than three millimeteres in diameter is of particular concern because of its adverse effects on aquatic life.

Sedimentation - The action or process of deposition of material borne by water, wind or glacier.

Smolt - A young salmon or trout which is migrating to the Pacific Ocean. At this time their appearance becomes silvery and they have either lost or are losing their parr mark.

Soil - The unconsolidated mineral matter on the surface of the earth that has been subjected to and influenced by genetic and environmental factors of parent material, climate (including moisture and temperature effects), Macro and Microorganisms, and topography, all acting over a period of time and producing a product - soil - that differs from the material from which it is derived in many physical, chemical, biological and morphological properties and characteristics. The immediate surface of the earth that serves as a natural medium for the growth of land plants. A kind of soil is the collection of soils that are alike in specified combinations of characteristics. Kinds of soil are given names in the system of soil classification. The terms "the soil" and "soil" are collective terms used for all soils, equivalent to the word "vegetation" for all plants.

Soil Association - A group of defined and named taxonomic soil units occurring together in individual and characteristic patterns over a geographic region. Comparable to plant associations in many ways.

Soil Classification - The systematic arrangements of soils into classes in one or more categories or levels of classification for a specific objective. Broad groupings are made on the basis of general characteristics and subdivisions on the basis of more detailed differences in specific properties.

Soil Creep - Slow mass movement of soil and soil material down relatively steep slopes, primarily under the influence of gravity but facilitated by saturation with water and by alternate freezing and thawing.

Spawn - The manner in which aquatic animals produce or deposit eggs or sperm.

Stocking Rate - The degree to which a grazing unit is stocked with livestock, usually expressed in AUMs. The stocking rate may be more or less than the carrying capacity.

Strutting Ground - A localized area used by some species of the grouse family to display their courtship rituals.

Supporting Measures - Structures, actions or practices where objectives or justifications are to increase forage production and utilization, to improve range conditions, or to facilitate management of the range or the livestock grazing thereon; range improvements.

Synoptic Air Flow - Regional wind movement indicated from a synopsis of data presented on a synoptic chart.

Talus - Coarse rock waste eroded from rock outcrops at the higher elevations.

Tertiary - The earlier of two geological periods comprising the Cenozoic era, usually regarded as about 70 million years of age.

Travertine - A calcium carbonate, $CaCo_3$, deposited from solution in ground and surface waters.

Tuffaceous - A rock characteristic resulting from compaction of volcanic fragments, generally smaller than four millimeters in diameter.

Utilization - The proportion of current year's forage production that is consumed or destroyed by grazing animals. Usually expressed as percentage. See also Intensity of Use.

Vertebrate - All animals having a segmented spinal column.

Visual Resources - The land, water, vegetative, animals and other features that are visible on all national resource lands.

Volcanic Debris - Also referred to as volcanic breccia - a more or less indurated pyroclastic rock consisting chiefly of angular ejecta 32 millimeters or more in diameter, a fine tuff or other volcanic matrix.

Wild Free-Roaming Horses and Burros - All unbranded and unclaimed burros and horses that have used or do use public lands as all or part of their habitat on or after December 15, 1971.

Wild Horse and Burro Range - A designated area of land necessary to sustain a herd or herds of wild free-roaming horses or burros, and which is devoted principally, but not necessarily exclusively, to their welfare in keeping with multiple-use management of public lands.

APPENDIX 2-A

CHALLIS AREA TEMPERATURE DATA

MEAN MONTHLY TEMPERATURE DATA (^{o}F) FOR THE CHALLIS AREA 1/

Station	Years	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Ann
Challis	30	18.4	25.0	34.2	44.7	52.9	59.7	68.1	65.9	57.5	47.1	32.4	23.0	44.1
Chili Barton Flat	23	13.2	18.1	27.4	38.4	47.6	53.8	60.6	58.5	50.5	41.2	27.4	18.8	38.0
May Ranger Station	24	16.8	23.6	32.6	43.3	51.6	57.3	65.3	63.7	55.3	45.3	30.7	21.5	42.3
Obsidian	30	14.3	18.4	24.0	33.3	42.6	48.6	56.8	55.1	48.2	39.7	26.0	17.4	35.4
Thompson Creek 1/	3	14.7	22.1	26.5	32.3	42.6	51.9	59.4	58.1	47.8	38.2	27.5	14.0	

1/ Data compiled by Tuscarora Mining Company

MEAN MONTHLY MAXIMUM TEMPERATURE (°F) DATA FOR THE CHALLIS AREA

Station	Years	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Ann
Challis	30	29.6	36.7	47.0	59.5	68.1	75.0	85.5	83.7	74.4	62.6	44.9	33.3	58.4
Chili Barton Flat	23	27.1	32.2	40.4	53.8	63.5	70.2	80.1	79.3	70.2	58.5	41.3	31.7	54.0
May Ranger Station	24	29.3	36.8	45.9	58.7	67.8	73.4	84.9	83.7	74.9	62.2	43.7	33.4	57.9
Obsidian	30	27.5	32.7	39.2	47.4	58.0	65.3	77.2	76.6	68.1	56.6	40.4	30.1	51.6
Thompson Creek	3	26	1/	-	-	-	-	75	-	-	-	-	-	-

1/ No data available

APPENDIX 2-B

FORAGE UTILIZATION OVERLAP FOR CATTLE AND WILDLIFE

PERCENTAGE OF OVERLAP IN FORAGE UTILIZATION BETWEEN HORSES, CATTLE, ELK, ANTELOPE, AND DEER AT VARIOUS SEASONS OF THE YEAR ON THE CHALLIS UNIT 1/

Animal and Season Computed	Percent Overlap
Antelope Summer and Antelope Winter	.73
Antelope Summer and Cattle Summer	.09
Antelope Summer and Cattle Winter	.16
Antelope Summer and Deer Winter	.78
Antelope Summer and Elk Winter	.19
Antelope Summer and Horse Spring	.18
Antelope Summer and Horse Summer	.09
Antelope Summer and Horse Fall	.05
Antelope Summer and Horse Winter	.15
Antelope Winter and Cattle Summer	.02
Antelope Winter and Cattle Winter	.11
Antelope Winter and Deer Winter	.78
Antelope Winter and Elk Winter	.10
Antelope Winter and Horse Spring	.02
Antelope Winter and Horse Summer	.02
Antelope Winter and Horse Fall	.02
Antelope Winter and Horse Winter	.12
Cattle Summer and Cattle Winter	.56
Cattle Summer and Deer Winter	.07
Cattle Summer and Elk Winter	.10
Cattle Summer and Horse Spring	.68
Cattle Summer and Horse Summer	.65
Cattle Summer and Horse Fall	.61
Cattle Summer and Horse Winter	.49
Cattle Winter and Deer Winter	.14
Cattle Winter and Elk Winter	.24
Cattle Winter and Horse Spring	.43
Cattle Winter and Horse Summer	.52
Cattle Winter and Horse Fall	.29
Cattle Winter and Horse Winter	.40
Deer Winter and Elk Winter	.31
Deer Winter and Horse Spring	.06
Deer Winter and Horse Summer	.07
Deer Winter and Horse Fall	.05
Deer Winter and Horse Winter	.17

1/ Hansen, 1975.

PERCENTAGE OF OVERLAP IN FORAGE UTILIZATION BETWEEN HORSES, CATTLE, ELK, ANTELOPE, AND DEER AT VARIOUS SEASONS OF THE YEAR ON THE CHALLIS UNIT 1/

Animal and Season Computed	Percent Overlap
Elk Winter and Horse Spring	.13
Elk Winter and Horse Summer	.13
Elk Winter and Horse Fall	.08
Elk Winter and Horse Winter	.20
Horse Spring and Horse Summer	.63
Horse Spring and Horse Fall	.66
Horse Spring and Horse Winter	.76
Horse Summer and Horse Fall	.49
Horse Summer and Horse Winter	.64
Horse Fall and Horse Winter	.57

1/ Hansen, 1975.

APPENDIX 2-C

POPULATION ESTIMATES OF WILDLIFE AND ACRES OF HABITAT BY CONDITION CLASS

APPENDIX 2-C

Estimated Deer, Elk, Bighorn Sheep, Antelope, and Sage Grouse Numbers and Condition of Crucial Habitat of These Species in Allotments and Pastures of the Challis Planning Unit

Allotment and Pasture	Estimated Numbers (Allotment) (Y=Yearlong S=Summer W=Winter)		Habitat Condition (acres) S=Summer W=Winter Y=Yearlong			
			Poor	Fair	Good	Total Acres
	Deer			Winter Ranges		
Garden Creek Allotment	S 10-30	W 350-450				
Klug Gulch Pasture			209	834		
John's Gulch Pasture			2650	294		
Birch Creek Pasture			788	1183		
Wood Creek Pasture			1488	637		
Total			5135 (64%)	2948 (36%)	0	8083
Bald Mountain Allotment	S 25-50	W 300-450				
Centennial Flat Pasture			2565	1283	427	
Birch Creek Pasture			791	1846		
Kinnikinic Pasture				77		
Total			3356 (48%)	3206 (46%)	427 (6%)	6989
Squaw Creek Allotment	S 25-50	W 100-150				
South Butte Pasture			182	727		
Saturday Mountain Pasture			154	461		
Total			336 (20%)	1188 (71%)	153 (9%)	1677
Thompson Creek Allotment	S 50-75	W 75-100				
Thompson Pasture			269	179		
Total			269 (60%)	179 (40%)	0	448
Sullivan Creek Allotment	S 10-20	W 40-50				
French Creek Pasture			461	576	115	
Sullivan Creek Pasture			345	148		
Total			806 (71%)	724 (44%)	115 (7%)	
Spud Creek Allotment	S 50-75	W 75-125				
LMB Spring Pasture			1602	401	0	
Joe Jump Pasture			976	569	81	
Total			2578 (71%)	970 (27%)	81 (2%)	3629

APPENDIX 2-C (cont.)

Estimated Deer, Elk, Bighorn Sheep, Antelope, and Sage Grouse Numbers and Condition of Crucial Habitat of These Species in Allotments and Pastures of the Challis Planning Unit

Allotment and Pasture	Estimated Numbers (Allotment) (Y=Yearlong S=Summer W=Winter)	Habitat Condition (acres) S=Summer W=Winter Y=Yearlong Poor	Fair	Good	Total Acres
	Deer (cont.)		Winter Ranges		
East Fork Allotment	S 25-50 W 200-300				
Marco Creek Pasture		1053	842	211	
Big Lake Creek Pasture		1637	545	0	
Boulder Creek Pasture		1286		0	
Total		3976 (71%)	1387 (25%)	211 (4%)	5574
Warm Springs Allotment	S 50-100 W 500-600				
Hole-in-Rock Pasture		664	443	0	
Antelope Flat Pasture		0	64	0	
Broken Wagon Pasture		0	595	0	
Spring Basin Pasture		94	219	0	
Sheep Creek Pasture		0	334	223	
Spar Canyon Pasture		285	233	0	
Total		1043 (33%)	1888 (60%)	223 (7%)	3154
Road Creek Allotment	S 5-15 W 200-250				
Dry Canyon Pasture		676	290	0	
Ziegler Basin Pasture		447	1187	0	
Total		1123 (43%)	1477 (57%)	0	2600
Herd Creek Allotment	S 40 W 200				
Pine Gulch Pasture		1085	2820	434	
Lake Basin Pasture		1459	973	0	
Taylor Creek Pasture		1229	2662	205	
Total		3773 (35%)	6455 (59%)	639 (6%)	10867
Pine Creek Allotment	S 10-20 W 75-100				
East Pasture		502	179	36	
West Pasture		685	121	0	
Total		1187 (78%)	300 (20%)	36 (2%)	1523

APPENDIX 2-C (cont.)

Estimated Deer, Elk, Bighorn Sheep, Antelope, and Sage Grouse Numbers and Condition of Crucial Habitat of These Species in Allotments and Pastures of the Challis Planning Unit

Allotment and Pasture	Estimated Numbers (Allotment) (Y=Yearlong S=Summer W=Winter)	Habitat Condition (acres) S=Summer W=Winter Y=Yearlong Poor	Fair	Good	Total Acres
	Deer (cont.)		Winter Ranges		
Split Hoof Allotment	S 20-40 W 150-200				
Woolley Pasture		0	1728	0	
Maraffio Pasture		339	1357	0	
Total		339 (10%)	3085 (90%)	0	3424
Round Valley Allotment	S 10-25 W 50-100				
Penal Gulch Pasture		96	0	0	
Rocky Gulch Pasture		173	0	0	
Leaton Gulch Pasture		979	653	0	
Camp Creek Pasture		382	972	0	
Gooseberry Pasture		560	560	0	
Total	S 330-550 W 2315-3075	2190 (50%)	2185 (50%)	0	4375
Subtotal		26111 (48.4%)	25992 (48.1%)	1885 (3.5%)	53988
	Bighorn Sheep				
Garden Creek Allotment	W 15-30				
John's Gulch Pasture		51	205	0	
Birch Creek Pasture		172 (20%)	689 (80%)	0	
Wood Creek Pasture		455	1062	0	
Total		678 (26%)	1956 (74%)	0	2634
East Fork Allotment	W 40-60				
Big Lake Creek Pasture		1283 (60%)	748 (35%)	107 (5%)	2138
Marco Creek Pasture		876 (50%)	877 (50%)	0	1753
Total		2159 (55%)	1625 (42%)	107 (3%)	3891

APPENDIX 2-C (cont.)

Estimated Deer, Elk, Bighorn Sheep, Antelope, and Sage Grouse Numbers and Condition of Crucial Habitat of These Species in Allotments and Pastures of the Challis Planning Unit

Allotment and Pasture	Estimated Numbers (Allotment) (Y=Yearlong S=Summer W=Winter)	Habitat Condition (acres) S=Summer W=Winter Y=Yearlong Poor	Fair	Good	Total Acres
	Bighorn Sheep (cont.)		Winter Ranges		
Road Creek Allotment					
Ziegler Basin	W 5-10	368	246	0	
Total	W 60-100	368 (60%)	246 (40%)	0	614
Subtotal		3205A(44.9%)	3827A(53.6%)	107A(1.5%)	7139
	Elk				
Warm Springs Allotment	W 140-175				
Broken Wagon Pasture			435	186	
Spring Basin Pasture		228	533	0	
Sheep Creek Pasture		0	238	357	
Total		228 (11.5%)	1206 (61.0%)	543 (27.5%)	1977
	Antelope				
Round Valley Allotment	Y 50-75				
Penal Gulch Pasture		Y 210	Y 90	0	
Rocky Gulch Pasture		Y 336	Y 144	0	
Leaton Gulch Pasture		Y1740	Y1392	Y 348	
Camp Creek Pasture		Y 528	Y1056	Y 176	
Gooseberry Creek Pasture		Y 544	Y1632	Y 544	
Total		Y3358 (38%)	Y4314 (49%)	Y1068 (13%)	Y 8740

APPENDIX 2-C (cont.)

Estimated Deer, Elk, Bighorn Sheep, Antelope, and Sage Grouse Numbers and Condition of Crucial Habitat of These Species in Allotments and Pastures of the Challis Planning Unit

Allotment and Pasture	Estimated Numbers (Allotment) (Y=Yearlong S=Summer W=Winter)	Habitat Condition (acres) S=Summer W=Winter Y=Yearlong Poor	Fair	Good	Total Acres
	Antelope				
Warm Springs Allotment	Y 500-700				
Hole-in-Rock Pasture		Y2767	Y4612	Y1846	
Gooseberry Pasture		Y1178	Y2945	Y1767	
Broken Wagon Pasture		0	Y 275	0	
Antelope Flat Pasture		S1081	S2704	S1623	
Bradbury Pasture		Y1032	Y1720	Y 688	
Sheep Creek Pasture		Y3226	Y5377	Y2152	
Spar Canyon Pasture		Y 782	Y1955	Y1173	
Corral Basin Pasture		S 304	S 610	S 102	
Spring Basin Pasture		S1478	S3696	S2218	
		S 563	S 704	S 141	
Total		Y8985 (27%)	Y16884 (50%)	Y7626 (23%)	Y33495
		S3426 (23%)	S7714 (51%)	S4084 (26%)	S15224
San Felipe Allotment	Y 350-400				
Horse Basin Pasture		S1781	S4453	S2672	
Total		S1781 (20%)	S4453 (50%)	S2672 (30%)	S 8906
Road Creek Allotment	S 40-80				
Chicken Creek Pasture		S 703	S 878	S 176	
Dry Canyon Pasture		S 362	S 363	0	
Total		S1065 (43%)	S1241 (50%)	S 176 (7%)	S 2482
Spud Creek Allotment	S 40-60 W 75-125				
Joe Jump Pasture		Y1160	0	0	
LMB Springs Pasture		Y 400	0	0	
Total		Y1560 (100%)	0	0	Y 1560

APPENDIX 2-C (cont.)

Estimated Deer, Elk, Bighorn Sheep, Antelope, and Sage Grouse Numbers and Condition of Crucial Habitat of These Species in Allotments and Pastures of the Challis Planning Unit

Allotment and Pasture	Estimated Numbers (Allotment) (Y=Yearlong S=Summer W=Winter)	Habitat Condition (acres) S=Summer W=Winter Y=Yearlong Poor	Fair	Good	Total Acres
	Antelope				
Split Hoof Allotment	Y 40-60				
Maraffio Pasture		Y2560	Y 640	0	
Woolley Pasture		Y 720	Y 80	0	
Total		Y3280 (82%)	Y 720 (18%)	0	Y 4000
Red Lake Allotment	Y 100-125				
Bradshaw Basin Pasture		Y 672	Y 288	0	
Lone Pine Pasture		Y 150	Y 350	0	
Bradbury Flat Pasture		Y1644	Y 411	0	
Total		Y2466 (70%)	Y1049 (30%)	0	Y 3515
Garden Creek Allotment	Y 20-40				
Klug Gulch Pasture		Y2282	Y2282	0	
Jeff's Creek Pasture		Y 174	Y 74	0	
Total	Y 1060-1400	Y2456 (51%)	Y2356 (49%)	0	Y 4812
Subtotal		Y22105 (39%)	Y25323 (45%)	Y8694 (16%)	Y56122
		S6272 (24%)	S13408 (50%)	S6932 (26%)	S26612
Total	S 80-140 W 75-125				

APPENDIX 2-C (cont.)

Estimated Deer, Elk, Bighorn Sheep, Antelope, and Sage Grouse Numbers and Condition of Crucial Habitat of These Species in Allotments and Pastures of the Challis Planning Unit

Allotment and Pasture	Estimated Numbers (Allotment) (Y=Yearlong S=Summer W=Winter)	Habitat Condition (acres) S=Summer W=Winter Y=Yearlong BN=Brooding, Nesting Poor	Fair	Good	Total Acres
	Sage Grouse				
Warm Springs Allotment	Y 400-800				
Gooseberry Pasture		BN 38	BN 26	0	
Antelope Flat Pasture		BN 787	BN 525	W 582	
Spar Canyon Pasture		BN 691	BN 461	0	
Broken Wagon Pasture		BN 472	BN 315	0	
Sheep Creek Pasture		BN 349	BN 233	0	
Corral Basin Pasture		BN1279	BN 852	0	
Spring Basin Pasture		BN 580	BN 386	0	
Total		BN4196 (60%)	BN2798 (40%)		BN6994
				W 582 (100%)	W 582
Red Lake Allotment	Y 200-300				
Bradshaw Basin Pasture		BN 365	BN 243	0	
Total		BN 365 (60%)	BN 243 (40%)	0	BN 608
Bald Mountain Allotment	Y 50-200				
Centennial Flat Pasture		BN 218	BN 146	0	
Total		BN 218 (60%)	BN 146 (40%)	0	BN 364
Split Hoof Allotment	Y 50-150				
Maraffio Pasture		BN 589	BN 393	0	
Total		BN 589 (60%)	BN 393 (40%)	0	BN 982
San Felipe/Peck Canyon Allotment	Y 300-700				
Horse Basin Pasture		0	W 443	W1034	
		BN2707	BN1805	0	
Road Creek Pasture			W 301	W 703	
		BN 107	BN 72		
Total		BN2814 (60%)	BN1877 (40%)		BN4691
			W 744 (30%)	W1737 (70%)	W2481

APPENDIX 2-C (cont.)

Estimated Deer, Elk, Bighorn Sheep, Antelope, and Sage Grouse Numbers and Condition of Crucial Habitat of These Species in Allotments and Pastures of the Challis Planning Unit

Allotment and Pasture	Estimated Numbers (Allotment) (Y=Yearlong S=Summer W=Winter)	Habitat Condition (acres) S=Summer W=Winter Y=Yearlong BN=Brooding, Nesting Poor	Fair	Good	Total Acres
	Sage Grouse (cont.)				
Road Creek Allotment	Y 100-300				
Chicken Creek Pasture		0	W 104	W 241	
		BN 334	BN 222	0	
Total		W 0	W 104 (30%)	W 241 (70%)	BN 556
		BN 334 (60%)	BN 222 (40%)		W 345
Herd Creek Allotment	Y 200-600				
Pine Gulch Pasture		0	W 23	W 54	
Total		0	W 23 (30%)	W 54 (70%)	W 77
East Fork Allotment	Y 100-300				
Marco Creek Pasture		0	W 42	W 99	
Total	Y 1400-3350	0	W 42 (30%)	W 99 (70%)	W 141
Subtotal		BN8516 (60%)	BN5679 (40%)	BN 0	BN14195
		W 0	W 913 (25.2%)	W2713 (74.8%)	W3626

APPENDIX 2-D

LIFE HISTORY NOTES FOR CHALLIS SALMONIDS

APPENDIX 2-G

LIFE HISTORY NOTES FOR SALMONID FISHES OF THE CHALLIS PLANNING UNIT 1/ 2/

Anadromous Species	Chinook		Steelhead Trout	Sockeye Salmon
	Spring	Summer		
Adult Fish				
Age at maturity (years)	Mostly 4 & 5 Some 3	3 to 5	Mostly 4 & 5	Mostly 4 & 5
Time in ocean (years)	1 to 3	1 to 3	1 to 2	1 to 3
Return to Challis area	June-July 3/	Mid-July - August	October - May	Mid-July - August
Spawning	August - early Sept.	September - early October	April - mid-June	4/
Preferred size of spawning gravels (inches)	3 to 6	3 to 6	1/2 to 4	4/
Egg Incubation, Hatching and Emergence into Streams	August - March	Sept. - April	April - mid-July	4/
Young Fish				
Time in fresh water (rearing) (years)	1	1	Most 2, Some 1 & 3	1 or 2
Migrate to ocean	Majority chinook and steelhead in April and May			Most in May
Food Habits	Chinook and steelhead eat mostly aquatic insects, terrestrial insects and other small invertebrates. Young sockeye live in Redfish Lake and are plankton feeders.			

Resident Species	Rainbow	Cutthroat	Brook Trout	Dolly Varden	Whitefish
Spawning	April-June	May-June	Sept.-Nov.	Sept.-Oct.	Oct.-Jan.
Egg Incubation, Hatching and Emergence into Streams	April-July	May-July	Sept.-April	Sept.-April	Oct.-early May
Age at Maturity (years)	3 to 4	3 to 4	3 to 4	4 to 6	3 to 4
Preferred Size of Spawning Gravels	1/4 to 1-1/2 inches for trout. Whitefish spawn over gravel bottoms.				
Food Habits	All trout and Dolly Varden fry feed initially on small aquatic life. Their diet gradually changes to larger insects, invertebrates and crustaceans. As they grow larger and reach maturity, rainbow and cutthroat consume some small fish. Dolly Varden become very predaceous on small fish. Whitefish are bottom feeders, eating primarily aquatic insect larvae but will also eat adult insects and small fish on occasion.				

1/ Bell, 1973; Bjornn, et. al., 1968; Bruner, 1951; Orcutt, et. al, 1968: and White and Cochnauer, 1975.

2/ Information summarized refers to usual habits or behavior for each species.

3/ A dash between months means that migration, spawning and egg incubation occurs throughout that time period.

4/ Sockeye salmon do not spawn or rear in waters within the Challis Planning Unit.

APPENDIX 2-E

ICE HARBOR CHINOOK, SOCKEYE AND STEELHEAD COUNTS

YEARLY COUNTS OF SPRING AND SUMMER CHINOOK, SOCKEYE AND STEELHEAD TROUT OVER ICE HARBOR DAM, 1962-75 1/ 2/

Year	Spring Chinook	Summer Chinook	Sockeye	Steelhead
1962	33,613	30,639	38	115,796
1963	26,778	20,875	1,118	74,539
1964	24,304	24,696	1,276	58,860
1965	12,178	14,701	317	62,873
1966	43,881	16,983	278	65,798
1967	35,593	30,315	717	44,205
1968	44,773	29,531	1,165	82,383
1969	52,090	30,917	745	63,889
1970	47,931	19,382	797	53,870
1971	32,638	26,606	532	67,029
1972	50,350	22,846	363	63,593
1973	60,639	12,829	233	38,311
1974	19,361	10,269	204	12,528
1975	21,401	7,727	243	13,799 3/

1/ (U.S. Army Corps of Engineers, 1975c).

2/ Most fish at this lowermost dam on the Snake River are destined for Idaho streams, with the majority of the chinook and all of the sockeye produced in the Salmon River.

3/ Incomplete count through October 7, but includes majority of run.

APPENDIX 2-F

IDAHO SALMON AND STEELHEAD CATCH ESTIMATES

IDAHO SALMON AND STEELHEAD CATCH ESTIMATES, 1954-1974 1/

Year	Chinook Salmon	Steelhead Trout
1954	15,000	12,000
1955	19,000	13,000
1956	12,000	8,000
1957	39,000	20,000
1958	24,000	30,000
1959	20,000	31,000
1960	21,000	30,000
1961	13,000	25,000
1962	12,000	19,000
1963	12,000	26,000
1964	8,000	18,000
1965	SALMON SEASON CLOSED	20,000
1966	8,500	20,000
1967	6,500	22,500
1968	10,000	23,000
1969	11,500	15,500
1970	5,500	20,500
1971	3,500	17,500
1972	6,500	13,500
1973	9,500	10,500
1974	1,500	3,000
1975	SALMON SEASON CLOSED	RELEASE FISH CAUGHT

1/ (Ortmann, 1975b).

APPENDIX 2-G

CHINOOK SALMON ECONOMIC ANALYSIS

APPENDIX 2-G

Economic Analysis of Chinook Salmon

Produced in the Challis Planning Unit

Previous Economic Analysis of Fisheries

Gordon (1970) conducted an economic analysis of sport fisheries in Idaho in 1968 by sending questionnaires to both resident and nonresident anglers. His analysis showed the net value of the fishery for anadromous fish in Idaho was an estimated $866,000 ($217,000 for the salmon fishery and $649,000 for the steelhead fishery).

The value of anadromous fish produced in the Salmon River drainage, but caught in the Pacific Ocean and lower Columbia River, was subsequently added to the values reported by Gordon during a 1969 study as shown below (Mallet and Bjornn, 1970).

ESTIMATED ANNUAL NET 1/ DOLLAR VALUES OF SALMON RIVER ANADROMOUS FISH POPULATIONS

Fishery	Net Value
Ocean and Columbia River commercial and sport harvest (1965)	$ 2,085,000
Salmon River salmon sport harvest (1968)	217,000
Salmon River steelhead sport harvest (1968)	649,000
Total annual dollar value of Salmon River anadromous fish resource	$ 2,951,000

1/ Maximum revenue obtainable by a non-discriminating monopolist from anglers for the privilege of fishing.

These values better represent the total value of the fish produced in the Salmon River watershed, and illustrate the magnitude of the catch outside the State of Idaho. This estimated annual value was determined for fish runs in 1965 and 1968. The figures represent the dollar value to the fishermen. Nonconsumptive uses of the fishery resource were not included in these values.

The 1970 estimates were updated to the 1974 Consumers Price Index to reflect increased costs since the 1969 study, and estimates for the value of the Salmon River anadromous resource to the entire public (fishermen plus nonconsumptive users) were also derived from a study by Sewell and Marts (Mallet, 1975). The estimated annual net values for Salmon River anadromous fish in 1974 were as follows:

Fishermen Only	$ 4,553,000
Fishermen and Nonconsumptive Uses	10,847,000

Economic Analysis for Challis Unit

East Fork

It is not possible to make a precise estimate of the value of salmon and steelhead produced in the East Fork and its tributaries. No escapement data are available for steelhead because they spawn when conditions for counting fish or redds are not conducive to making reliable counts.

A minimal estimate of the partial net value for chinook salmon produced in the East Fork (including Herd Creek) can be made indirectly by using redd counts and other applicable data. The following estimate is not intended to serve as a precise value nor should it be construed

as such. The calculations were made to provide an estimate of the general value of chinook salmon produced in the East Fork drainage when runs were large enough to support a fishery in Idaho.

An average of 720 chinook redds (10.6% of the total Salmon River counts) were counted in the East Fork and Herd Creek by personnel of the Idaho Department of Fish and Game during 1962-69 spawning ground surveys (Mallet and Bjornn, 1970). These figures do not represent total counts for these two streams because the entire spawning areas are not counted. The counts include both spring and summer chinook, and it is not known if these different races are caught in equal proportions in various ocean fisheries.

Weir studies of spring chinook in the Lemhi River over a ten-year period (1965-74) indicate there are 1.3 males for each female spawner (Bjornn, 1975). There are, therefore, 2.3 adult spawners per redd, assuming one female digs only one redd. The average number of chinook calculated for the spawning populations in the East Fork during 1962-69 is 1,656 fish (720 redds x 2.3 fish per redd).

A method was developed for estimating the partial net economic values for salmon and steelhead in the Columbia River system by using the number of fish in the escapement for any given run (Tuttle, et al., 1975). For each spawning spring chinook in the escapement, it was calculated that two fish were caught and the value of each fish escaping the fisheries was $143.76.

By multiplying the average number of spawning fish (1,656) by the dollar value per fish ($143.76), the estimated annual net value of

chinook salmon produced in the East Fork watershed is $238,066. This estimate is probably conservative because redds are not counted in all areas where fish spawn.

While the accuracy of the estimate may be questioned because of the methods used, it is considered the best analysis possible with existing data. As previously stated, it is intended to give the reader a general estimate of the value of chinook salmon produced in the East Fork system. Regardless of the true annual net economic value, data based on reliable studies show that over 3,300 chinook produced in the East Fork and tributaries were caught, mostly in fisheries outside Idaho waters. Also, these values were based on conditions in the 1960s when the spring chinook run was in fair condition. Unusually high mortalities of seaward-bound smolts have occurred since then. If the present trend of much smaller runs continues and catches are reduced or eliminated (such as occurred in 1975 for spring chinook fisheries in the main Columbia River and the sport fishery for salmon in Idaho), this estimate would obviously not represent the current situation.

The estimate does give the reader an idea of the general magnitude of the number of chinook the East Fork and tributaries are capable of producing if downstream problems are solved. The total fishery value of the East Fork drainage is considerably larger than that presented for chinook only. Catches of steelhead and other game fish were not included in the economic analysis.

Chinook salmon redds are counted from the mouth of the East Fork upstream approximately 24 miles to the U.S. Forest Service Bowery Guard

Station and up Herd Creek about three miles. The BLM administers land adjacent to about seven of the total 27 miles of streams surveyed for redds as well as a considerable part of the total East Fork watershed. About 26% or $61,880 of the total annual net value of $238,000 assigned to the East Fork watershed can, therefore, be attributed to chinook production from streams on NRL.

Salmon River

An average of 297 summer chinook redds were counted in the main Salmon River from Salmon City upstream about 125 miles to the Sunny Gulch Sheep Bridge below Redfish Lake Creek (Mallet and Bjornn, 1970). Based on an analysis of redd counts by four river sections during 1969-73, it was determined that approximately one-third of the redds were observed in the 38-mile reach of the Salmon River within the Challis Planning Unit.

The estimated annual net value of the summer chinook produced from the unit would be $33,065, assuming a catch of two fish per each spawner, 2.3 fish per redd, and a dollar value of $143.76 per fish similar to that for spring chinook (100 redds x 2.3 fish per redd x $143.76 per spawning fish). About $15,210 could be attributed from the Salmon River adjacent to BLM lands.

Total Challis Unit

About 12% of the total spring and summer chinook redds counted in the Salmon River drainage were observed in streams of the unit. Adult

chinook spawned in the unit would have an estimated annual net value of $271,000 to sport and commercial fisheries, of which $77,100 could be attributed to streams adjacent to NRL.

Herd Creek Only - Spring Chinook

Herd Creek is an excellent spring chinook spawning stream. There are about six miles of good habitat below the main forks. Annual redd counts in the lower four miles from the mouth to Lake Creek during 1960-69 average 136 redds (Mallet, 1974). This is an average of 34 redds per mile. An average of 204 redds for the total six miles would be obtained by using the average figure of 34 redds per mile counted in the lower four miles surveyed, assuming the same spawning population density in the upper two miles. The average number of spring chinook in the spawning escapements to six miles of Herd Creek would have been 469 fish (204 redds x 2.3 adults per redd), with an estimated contribution of 938 fish to various fisheries and a current partial annual net value of $67,423.

The basic data for the separate Herd Creek analysis were for difference years and a larger area than the data incorporated with the East Fork. These values for Herd Creek were included to provide estimates showing the importance of Herd Creek to chinook runs during the 1960's as well as its potential for continued salmon production in future years. About three and one-half miles of Herd Creek flow through national resource lands.

APPENDIX 2-H

CRITERIA FOR EVALUATING CHALLIS UNIT STREAM CONDITIONS

APPENDIX 2-H

CRITERIA FOR EVALUATING CHALLIS UNIT STREAM CONDITIONS

1. High Stream Cover (June-September; 11:00 a.m.-5:00 p.m. MDT)

   Good - More than 70%

   Fair - 40 to 70%

   Poor - Less than 40%

2. Conditions of Low Streambank Vegetation (Mostly grasses and sedges, 25 feet each side of stream)

   Good - No use or some use; vegetation well-rooted and over eight inches high; sod intact; very little, if any, erosion from vegetated areas.

   Fair - Grazed fairly close to sod; vegetation generally well-rooted and mostly four to eight inches high; sod mostly intact; soil showing in places (less than 10% overall) with hoofs breaking sod; some surface erosion evident.

   Poor - Heavy grazing use; vegetation generally cropped close to sod and less than three inches high; considerable soil showing (over 20% of streambanks) with sod damage by hoofs serious; active surface erosion a serious problem.

3. Physical Condition of Streambanks (Related to natural and grazing-caused erosion)

   Stable - Less than 5% of banks with active erosion.

   Fairly Stable - From 5 to 10% of banks with active erosion.

   Unstable - More than 15% of banks with active erosion.

4. Stream Channel Stability

   Good - No or negligible lateral channel movement and bank erosion (cutting), scour, or changing channels.

   Fair - Some lateral channel movement and bank erosion (5 to 10%), minor channel scour or changing channels within streambed.

Poor - More than 15% lateral channel movement and bank cutting, changing channels and severe scour evident and source of extreme sedimentation.

5. Sedimentation of Streambed (Percent of fine sediments - particles sand size and smaller covering stream bottom - wetted parameter)

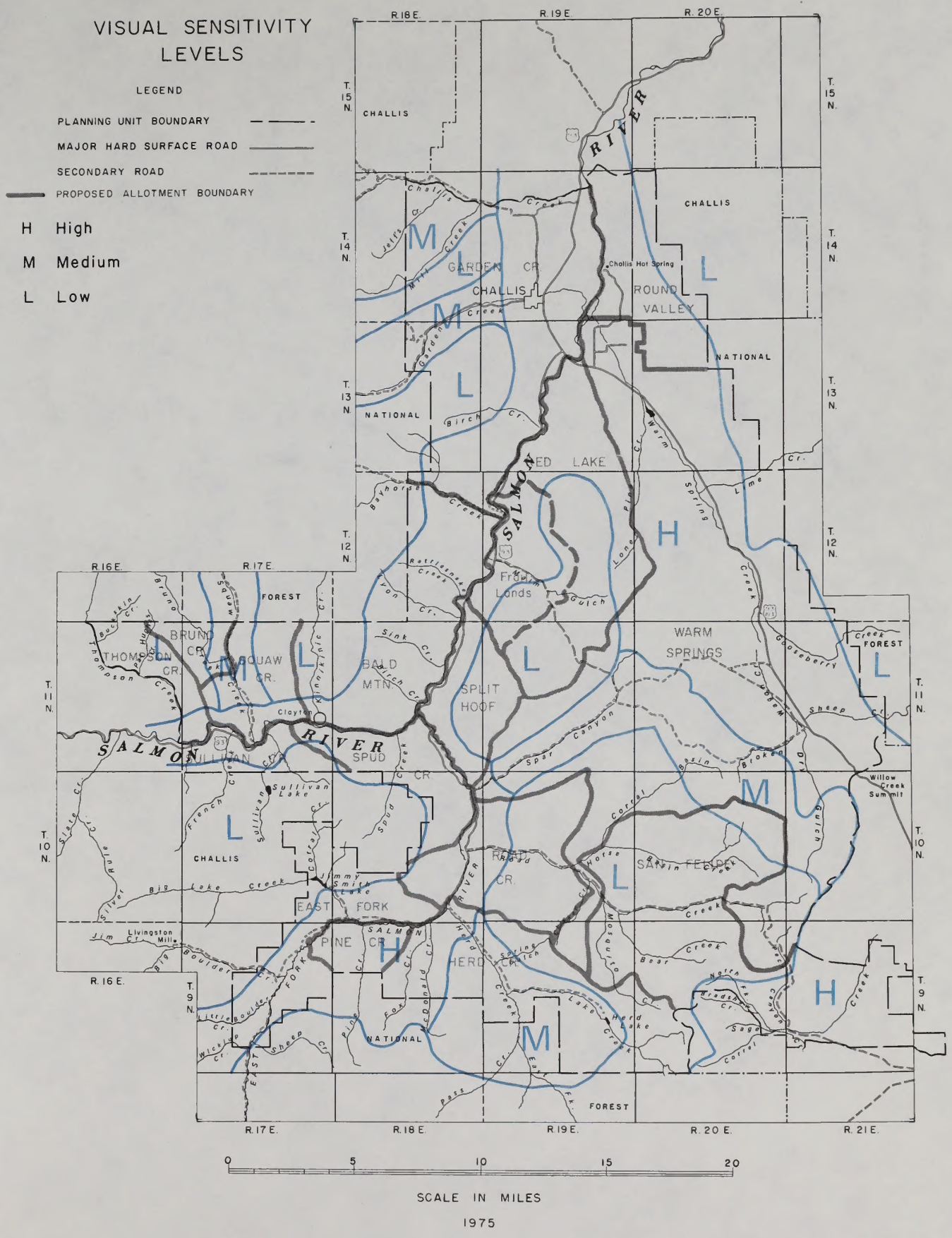
Light - Less than 10%

Moderate - 10 to 20%

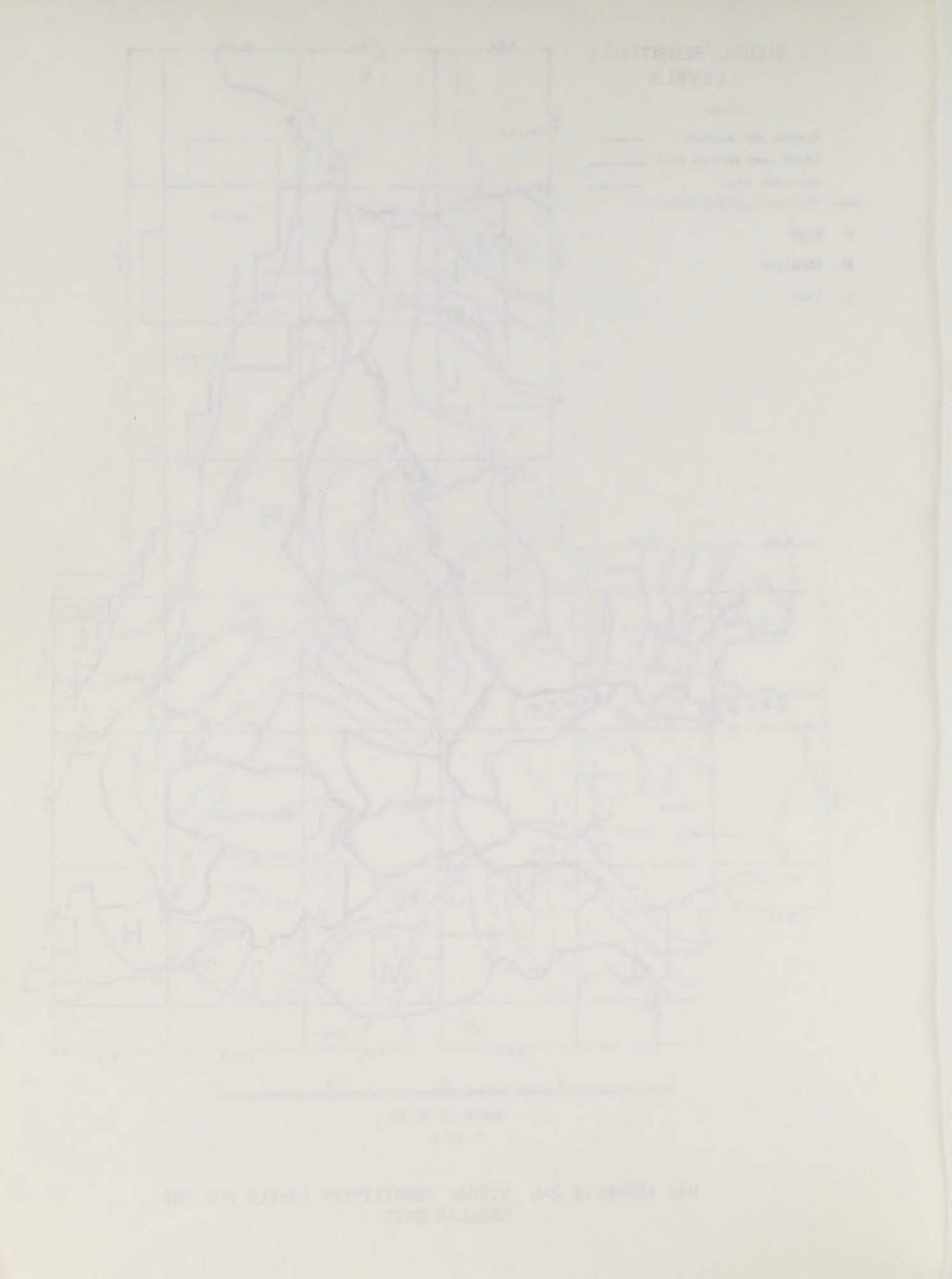
Heavy - More than 25%

APPENDIX 2-I

VISUAL SENSITIVITY LEVELS



MAP APPENDIX 2-L VISUAL SENSITIVITY LEVELS FOR THE CHALLIS UNIT



APPENDIX 2-J

HUMAN OCCUPATION OF CHALLIS UNIT

APPENDIX 2-J

Cultural Resources

Human Use and Occupation Summary

To organize and study the vast quantities of prehistoric cultural material from different regions and time ranges, archaeologists have devised a broad historical-developmental framework of prehistorical culture stages (Jennings, 1974 and Willey, 1966). In Idaho, only three of these stages are represented: The Big Game Hunting Stage, The Proto-archaic Stage (Butler, 1973b), and The Western Archaic Stage.

About 12,500 years ago, a series of subdivisions of the Big Game Hunting Stage spread across North America. These subdivisions are formally known as the Clovis, Folsom, and Plano archaeological cultures. All three of these subdivisions are well documented from numerous sites on the Great Plains east of the Rockies and in the Southwest. The economic system of these early cultures centered on the exploitation of large, now extinct, beasts such as mammoth, giant bison and camel, among others.

Projectile points characteristic of the Big Game Hunting Stage occur on the Snake River Plain (Swanson, 1961; Butler, 1965, 1968b, 1973a) and its adjoining valleys. Point types representing the Folsom and Plano subdivisions have been found on the surface within the unit, indicating perhaps 11,000 years of human occupation. Although neither Clovis nor Folsom cultural material has been recovered from scientifically controlled excavations, nondiagnostic cultural material has been found

in association with extinct animal forms believed to be of Late Pleistocene origin. At the present time, only Plano point types have been recovered from undisturbed deposits in Idaho. Archaeological research on the fringe of the Challis Unit has yielded a record of human habitation and big game hunting which spans approximately 15,000 years (Gruhn, 1965). The key sites adjacent to the Challis Unit which date to the Late Pleistocene or Early Holocene are: Wilson Butte Cave (Gruhn, 1961); Owl Cave or The Wasden Site (Butler, 1968a); Jaquar Cave (Sadek-Kooros, 1972); Bison and Veratic Rockshelter (Swanson, 1972b); Redfish Overhang (Sargent, 1972); The Shoup Rockshelters (Swanson and Sneed, 1966) and Jackknife Cave (Swanson and Sneed, 1971).

The second historical-development stage in central and southeastern Idaho is the transition, or Protoarchaic Stage, from the early Big Game Hunting Stage to the Western Archaic Stage. This transitional stage probably occurred between approximately 7,800 and 7,000 years B.P. with the initial appearance of a new weapon system, the atlatl and stemmed indented based and side-notched points (Butler, 1973).

Earl Swanson (Swanson, 1972b) proposed that it is in this transition that the pattern of the Bitterroot culture took shape as an evolution from the earlier hunting culture marked by lanceolate points of the Plano tradition. Swanson also suggested that the beginning of the Bitterroot culture is the archaeological expression of the historical Northern Shoshoni.

The third historical-developmental stage in Idaho is the Western Archaic Stage. This stage began approximately 7,000 B.P. and encompasses widely varying artifact assemblages and features. Quantities of milling

stones and masses of fire-cracked rock used in stone boiling and pit roasting suggest a greater range of exploitation of natural resources than previously. One further technological change that occurred during the Archaic Stage was the introduction of the bow and arrow around 3,000 years B.P. (Butler, 1973).

Based on the archaelogical record, the mountains and valleys north of the Snake River Plain appear to have been the major areas of prehistoric habitation in central and eastern Idaho. Through oral tradition and written documents, we know that the tukudeka'a, a small group of Shoshoni-speakers, occupied portions of the Rocky Mountains in Idaho, Wyoming and Montana in recent time. However, the ethnic and linguistic affiliations of the prehistoric people who inhabited this region have not been adequately demonstrated to the satisfaction of a number of specialists. Thus, some controversy exists regarding the culture history of the Northern Shoshoni in the Northern Rocky Mountains.

With the introduction of the horse in southern Idaho in the early 1700s, a profound and permanent change occurred in the lifestyle of a significant portion of Idaho's Indian population. Large groups of Indians, who were formerly limited to the mountains and valleys of eastern and central Idaho, now began regular trips across the Continental Divide to the High Plain to exploit bison. The acquisition of the horse greatly increased Idaho Indians' mobility, revolutionized their economic system, and brought them into closer contact with other Indian peoples on the Plains. Subsequently, in a relatively short period of time, many of Idaho's Indian peoples adopted Plains Indians' cultural traits, including elements of social structure and ideology.

Although a significant portion of the Indian population in eastern and central Idaho is believed to have been directly affected by the arrival of the horse, most of the tukudeka'a (mountain sheepeaters) continued their traditional cultural ways until the second half of the nineteenth century.

The first contact between Euro-Americans and the Northern Shoshoni was with the Lewis and Clark expedition in 1804, on the Lemhi River. Within 75 years, this initial contact proved to be disastrous to the indigenous population of the Salmon River region.

The first Euro-Americans to explore the area now known as the Challis Planning Unit were a Hudson's Bay Company fur trapping brigade led by Michel Bourdon in 1822. Bourdon named Round Valley, the valley where the town of Challis is now located. Many other trapping brigades led by such men as Alexander Ross, Thomas McKay and John Work of the Hudson's Bay Company; and Captain B. L. E. Bonneville of the American Fur Company, traveled through the unit in search of beaver. By 1833, with the beaver depleted, trapping became unprofitable and the large trapping brigades no longer frequented the region.

From the mid-1830s to the mid-1860s, the Northern Shoshoni had few direct contacts with Euro-Americans in the upper Salmon River country. Nevertheless, many of the small family units experienced tremendous cultural change. Fewer and fewer families maintained their traditional lifeways. Many of the tukudeka'a now joined their horse-mounted kin and adapted to a new lifestyle.

In the mid-1860s gold was discovered throughout the Salmon River Mountains and along the many tributaries of the Salmon River. As a

result, thousands of gold seekers poured into the ancestral homeland of the Northern Shoshoni. A rash of new mines and towns followed the rush from the head of the Salmon River down to the upper part of the main canyon; towns such as Clayton, Crystal, Bayhorse and Challis (MAP 2-25) were being established as freight terminals for the various mining districts.

As the mountains and valleys of the Salmon River country filled with ever-increasing hordes of miners and packers, most of the Northern Shoshoni were moved onto reservations at Lemhi or Fort Hall. Many of the tukudeka'a, however, retreated deeper into the remote and rugged reaches of the Salmon River Mountains.

By 1879 Challis (named after Alvah P. Challis, an early day miner and stockman) had become the main freight and packtrain terminal for all mining activity in the Yankee Fork district. Challis was not founded until January 1878, but a supply station had been established on the site by A. P. Challis in the summer of 1876, and at that time was referred to as "the station."

In early 1877 major lead and silver deposits were discovered on Bayhorse Creek and on Kinnikinic Creek. By the late 1870s, Crystal, a small freighting station was established near the confluence of the Salmon River and the East Fork to supply the Poverty Flat mining area. Also, the town of Clayton was established to serve the mines in the Clayton region, and later the town of Bayhorse was established to service the mines in the region.

As the various mining districts increased in population, the surrounding valleys filled with farms and ranches to supply the

ever-increasing need for fresh produce and meat, and as a consequence the towns also attracted merchants and businessmen. George L. Shoup, the last territorial governor of Idaho Territory and the first governor of the State of Idaho, had a mercantile business in Challis. Freight and stage roads were established from the rail terminal at Corinne, Utah and in 1879 from the rail terminal at Blackfoot, Idaho, through Mackay. The Challis-Mackay road came over Willow Creek Summit, through Antelope Flat, and down Lone Pine Creek, through Bradbury Flat and crossed the Salmon River on a ferry (later a bridge replaced the ferry, and was called Jenson Bridge) and on into Challis. Freight for the Bayhorse district went up Garden Creek from Challis to Keystone Gulch, up Keystone Gulch and down Beardsley Gulch to Bayhorse Creek. Later a freight road was established up Spar Canyon, through Bradshaw Basin and down Malm Gulch to the Salmon River and up Bayhorse Creek (MAP 2-25). Stops were located on Antelope Flat (later called Frost) and at Summit Spring, although little evidence of these sites remain.

All this expansion by the white intruders finally led to serious friction with the Bannock-Shoshone Indians at Fort Hall and culminated in the Bannock Indian War of 1878. A small stone fort was constructed in Challis in the summer of 1878, and fear of Indian reprisals were heightened after an attack by Bannock Indians on a Shoup Company freight train resulted in the death of teamster Jesse McCaleb on August 11, 1878, just a few miles south of the planning unit in the Lost River Valley. After the Bannock War of 1878, pressure was exerted on the Army by the miners to round up the remaining nonreservation Indians--the tukudeka'a. These small groups of Indians had been surprisingly

inoffensive to the whites, yet fear of further trouble had been enough to discourage prospecting in some of the more remote mountain country. Finally in 1879, the Army undertook an extremely difficult campaign in the middle of the Salmon River Mountains and forced the surrender of 51 Sheepeaters who were moved to the Fort Hall Reservation.

Thus ended the final episode in Idaho's Indian wars although a few families continued to live their mountain life unmolested for another decade or two.

Up until 1880, the various mining districts within the southern section of the Salmon River Mountains had constituted parts of Lemhi and old Alturas Counties. At that time the population had increased to such a sizable number (estimated at 7,000) that a more accessible government appeared necessary, and prompted the introduction of a bill to create a new county. The bill was presented before the eleventh session of the Idaho Territorial Legislature when it convened December 13, 1880, in Boise City. Thus, Custer County was created and the town of Challis with a population of 614 was elected by a small margin of nineteen votes over Bonanza as county seat. Crystal received nineteen votes and Clayton one vote. The bill passed on January 8, 1881, marking the legal date of the establishment of Custer County. The General Custer Mine on Yankee Fork was discovered the same year as Custer's Last Stand (1876). This event is said to have inspired the men who made the discovery to name it after the general, and subsequently Custer County. An account of the county's prospects offering inducements to settlers and capitalists, in the April 28, 1903, issue of The Silver Messenger (now The Challis Messenger) cited the fact, saying in part: "its brilliant prospects not inaptly

commemorate the name of General Custer whose dashing, romantic yet productive career has become a part of our national history." (Yarden, 1963).

By the early 1900s, the mines gradually began to fade, and the 5,000 or so miners of the Yankee Fork district drifted off in search of other bonanzas or acquired farms and ranches in the surrounding valleys.

The small town of Crystal, which had a population of 54 in 1890, disappeared. The mines of Bayhorse ceased operation in 1925, and became a ghost town. Of the early mining towns, only Clayton survived the fate of the others in the unit. Today, the mine at Clayton continues to produce lead and silver. However, Clayton, which had a population of 252 in 1890, now has a population of only 36. As the mines in the Yankee Fork district closed down, Challis also experienced a decrease in population from 614 in 1880 to 338 by 1910, and became more and more a ranching/farming-oriented community.

APPENDIX 2-K

PERSONAL INCOME FOR CUSTER COUNTY

APPENDIX 2-K

PERSONAL INCOME IN CUSTER COUNTY

	1965	1966	1967	1968	1969	1970	1971	1972
PERSONAL INCOME BY RESIDENCE	6,194	5,967	6,339	6,076	6,940	7,441	7,865	8,707
Wage and salary disbursements	2,816	3,126	3,409	3,309	3,627	3,877	4,091	4,302
Farms	502	497	441	401	506	550	516	601
Mining	186	238	360	442	552	600	527	312
Contract Construction	101	52	239	69	31	51	22	24
Manufacturing	69	108	110	138	52	23	51	86
Food processing	0	0	0	0	1	1	0	1
Lumber	55	78	74	107	20	2	17	43
Transportation equipment	0	0	0	0	0	0	0	0
Other	14	30	36	31	31	20	34	42
Transportation	102	102	109	88	101	88	150	207
Railroads	33	24	21	28	24	22	38	42
Trucks, buses and warehouses	69	78	88	62	77	66	110	159
Other	0	0	0	0	0	0	2	6
Public utilities	105	123	129	136	151	168	188	214
Communication	20	25	23	21	22	25	31	41
Electric, gas, sanitary and other utilities	85	98	106	115	129	143	157	173
Commerce	275	279	275	284	321	309	325	354
Wholesale	8	11	14	79	75	63	80	82
Retail	267	268	261	205	246	246	245	272
Finance, insurance and real estate	77	79	77	91	100	108	109	148
Finance	63	64	69	77	85	90	95	104
Insurance and real estate	14	15	8	14	15	18	14	44

APPENDIX 2-K (cont.)

PERSONAL INCOME IN CUSTER COUNTY

	1965	1966	1967	1968	1969	1970	1971	1972
Services	129	130	270	278	302	341	378	440
Hotels and other lodging places	55	73	201	192	219	229	248	294
Personal services and private households	21	29	33	32	33	34	35	35
Business and repair services	1	0	2	9	2	21	34	25
Amusement and recreation	15	5	13	20	22	29	30	53
Professional, social, and related services	37	23	21	25	26	28	31	33
Government	1,293	1,498	1,381	1,363	1,478	1,611	1,794	1,885
Federal, civilian	765	916	757	697	780	852	978	1,013
Federal, military	27	29	28	27	32	37	43	47
State	53	67	70	74	82	102	106	104
Local government	448	486	526	565	584	620	667	721
No. units 1966/1972								
Counties	67	71	79	88	95	105	122	121
Cities 4/4	28	31	32	34	35	37	39	41
Public schools 2/2	296	324	352	378	385	405	441	482
Hospitals 0/0	0	0	0	0	0	0	0	0
Water and irrigation 4/4	37	39	40	42	43	47	48	49
Highway 1/1	17	18	19	20	22	22	23	24
Miscellaneous 2/4	3	3	4	3	4	4	4	4
Other industries	22	20	18	19	33	28	31	31
Other labor income	106	108	133	155	199	216	240	243
Proprietors income	1,664	1,199	1,113	859	1,240	1,129	1,135	1,397
Farm	924	475	436	101	638	513	384	800
Nonfarm	740	724	677	758	602	616	751	597
Total earnings by place of work	4,631	4,433	4,655	4,323	5,066	5,222	5,466	5,942

APPENDIX 2-K (cont.)

PERSONAL INCOME IN CUSTER COUNTY

	1965	1966	1967	1968	1969	1970	1971	1972
Less personal contributions for social insurance	111	138	193	226	235	255	268	278
Plus: Residence adjustment	271	290	299	280	286	335	334	420
Seasonal	(39)	(35)	(30)	(40)	(55)	(25)	(43)	(32)
Commuters	310	325	329	320	341	360	377	452
Net earnings by residence	4,791	4,585	4,761	4,377	5,117	5,302	5,532	6,084
Property income	915	854	962	1,010	1,037	1,192	1,290	1,371
Transfer payments	488	528	616	689	786	947	1,043	1,252
O.A.S.D.H.I.	251	263	290	320	364	450	514	615
Public and railroad returement	47	57	71	76	112	130	151	182
Veterans' benefits	70	71	76	79	89	97	101	116
Unemployment insuracne	28	15	12	35	26	30	57	99
Medicare	0	26	60	69	78	123	89	98
Educational assistance	*	1	1	1	1	1	1	1
Public assistance	31	33	37	30	35	37	44	44
Food stamps	0	0	0	0	0	0	0	6
Other transfers	61	62	69	79	81	79	86	91
PERSONAL INCOME BY RESIDENCE	6,194	5,967	6,339	6,076	6,940	7,441	7,865	8,707
Cattle and calves	1,717	1,778	1,452	1,537	1,574	1,890	2,036	2,775
Sheep	257	238	234	270	326	293	277	247
Hogs	74	75	59	53	54	54	51	62
Dairy products	70	76	74	72	69	77	84	92
Poultry and eggs	5	5	3	2	2	2	2	;
Wool	53	64	39	51	64	64	41	60
Other livestock	32	37	32	35	35	31	33	39
Livestock products	2,208	2,273	1,893	2,020	2,124	2,411	2,524	3,276

*Less than $500

APPENDIX 2-K (cont.)

PERSONAL INCOME IN CUSTER COUNTY

	1965	1966	1967	1968	1969	1970	1971	1972
Wheat	123	117	116	79	97	77	70	61
Barley	143	84	88	90	83	121	180	191
Other grain	26	20	20	24	30	41	34	28
Hay	304	416	296	290	403	378	462	517
Potatoes	490	469	400	473	684	602	494	411
Dry beans	0	0	0	0	0	0	0	0
Dry peas	0	0	0	0	0	0	0	0
Other vegetables	0	0	0	0	0	0	0	0
Sugar beets	4	0	0	0	0	0	0	0
Seedcrops	1	1	3	3	3	3	3	1
Other crops	2	0	4	2	0	1	17	28
Total crops	1,093	1,107	927	961	1,300	1,223	1,260	1,237
Fruits and nuts	0	0	0	0	0	0	0	0
Cash receipts from all commodities	3,301	3,380	2,820	2,981	3,424	3,634	3,784	4,513
Government payments	93	174	125	113	205	159	219	274
Non-money income	297	281	291	297	311	326	355	382
Other farm income	22	23	27	29	31	30	36	37
Total realized farm income	3,713	3,858	3,263	3,420	3,971	4,149	4,394	5,206
Operating expenses	1,891	1,940	1,959	1,967	2,211	2,388	2,493	2,713
Depreciation and repairs	606	634	673	694	719	730	798	848
Taxes on farm property	181	187	200	203	193	207	224	232
Interest on mortgage debt	263	287	318	352	377	407	457	515
Net rent to nonfarm landlords	42	59	61	74	78	84	83	120
Total production expenses	2,983	3,107	3,211	3,290	3,578	3,816	4,055	4,428
Realized net farm income	730	751	52	130	393	333	339	778
Net change in farm inventories	194	(276)	384	(29)	245	180	45	22
Total net farm income	924	475	436	101	638	513	384	800

APPENDIX 2-L

CULTURAL RESOURCE INVENTORY RESEARCH DESIGN

APPENDIX 2-L

CULTURAL RESOURCE INVENTORY RESEARCH DESIGN

A number of Federal laws, i.e. PL 93-291, Antiquities Act of 1906, National Historic Preservation Act of 1966 PL 85-665, Executive Order 11593, federal regulations, and U.S. Department of the Interior policy require that BLM manage cultural properties under its jurisdiction and that its actions and programs do not inadvertently affect nonfederal cultural resources.

The emerging cultural resource inventory policy of the BLM's cultural resource management program requires an on-the-ground examination of at least 10% of each planning unit in order to construct probability models which would be statistically reliable for the whole unit. The research design utilized in the Challis Unit cultural resource inventory was planned in accordance with this evolving cultural resource inventory policy.

As indicated in Chapter 2, until the initiation of the Grazing EIS analyses, no systematic cultural resource inventories were undertaken in the Challis Unit. Thus there existed a dearth of information on the quantity and quality of cultural properties in the area. Without adequate cultural resource data provided by systematic cultural resource inventories, the BLM land use plans (URAs/MFPs) for the Challis Unit would be inadequate. In addition, without cultural resource inventories, cultural resources would not be evaluated, impacts would not be analyzed, compliance with 106/2(b) procedures (36 CFR 800) would not be achieved, and proper mitigation would not be undertaken in support of projects that affect cultural resources.

In light of major deficiencies in cultural resource information which existed in the Challis Unit, the BLM funded a large scale, systematic, sample-orientated cultural resource inventory of the entire Challis Unit. A contract for this work was let to Idaho State University with B. Robert Butler, Associate Professor of Anthropology, as director of the project.

The formal research design was composed of the following methodologies (see MAP 2-24 for actual areas inventoried):

1. A stratified, systemmatic, unaligned sample was made of randomly selected portions of each AMP. In the Challis Unit AMPs and natural drainages, in general, conveniently coincide. This is most fortuitous since current probablility modeling in archaeology strongly supports sampling within such natural units.

2. A transect was made across Antelope Flat.

3. A linear survey was made along Lone Pine Creek and portions of NRL along the Salmon River.

4. Sixteen sections, identified as having a high probability of cultural resources, were intensively surveyed.

The foregoing methodologies resulted in the following percentage of NRL in the Challis Unit being inventoried for cultural resources (Butler, personal communication):

1. The stratified, systematic, unaligned method	-11.7%
2. The nonrandom methods (transect, linear and selected section)	- 4.9%
Total NRL inventoried for cultural resources	16.6%

APPENDIX 3-A

METHODOLOGY FOR DERIVING ESTIMATES IN TABLE 3-5 IN THE VEGETATION SECTION OF CHAPTER 3

Data in this appendix are used to compare grazing use at the present time with what would occur for the proposed action (refer to APPENDIX 3-B for allotment-specific data). Following is an explanation of the material in this appendix and how it was interpreted to arrive at the effect ratings on TABLE 3-5. For each allotment the following definitions apply:

Present Use

Present use is grazing use now being made in the allotment during the treatment periods shown. The total of the present grazing use of Treatment A and Treatment B equals the total grazing use now being made in the allotment. The present use figures include nonuse that is currently being taken by the operators.

Approximate Present Use by Pasture

Approximate present use by pasture is the estimated AUMs of grazing use that is now being made in what would be each separate pasture area under the proposal. Use by pasture for each area for each treatment is shown under the present use category. Livestock graze the entire allotment during the periods shown. The approximate present use by pasture is approximately the number of AUMs now being used in what would be each separate pasture area. The approximate present use by pasture was estimated by referring to the existing range survey grazing capacity data for each pasture area and proportioning present use accordingly.

Proposed Use

Proposed use is the grazing use the operators would be authorized under the proposal. Proposed use for each treatment is shown. The total of the use proposed for all treatments is the total grazing use that would be authorized under the proposal.

In any one treatment the proposed grazing use is the amount of use that would be made during that treatment in that pasture scheduled for use. By comparing the proposed use with what was previously made in that pasture during the same time period the specific impacts can be assessed.

When evaluating impacts, the periods of rest proposed both before and after the treatment must also be compared with what is occurring under the present use.

For explanation purposes the following information for Red Lake (APPENDIX 3-B) is provided as an example of the first phase of the analysis approach to which allotment-specific data were subjected.

Treatment A

A total of 813 AUMs are scheduled for use from 5/1 to 6/15 in one of the three pastures. Assuming the Bradshaw Basin pasture presently grazed with 459 AUMs is scheduled for this treatment, grazing use would be 77% more under the proposal.

Treatment B

A total of 586 AUMs are scheduled for use from 6/16 to 8/15 in one of the three pastures. Assuming the Bradshaw Basin pasture presently grazed with 130 AUMs is scheduled for this treatment, grazing use would be 351% more under the proposal. No grazing will be authorized in this pasture 5/1 to 6/15 under the proposed use during this period. The impacts from resting the pasture from 5/1 to 6/15 versus grazing it during this period must also be weighed.

Treatment C

Under this treatment, 589 total AUMs are being used at present. This is the total of the approximate use for both the A and B treatments. The proposal is to rest the area from grazing season-long. Impacts are evaluated on the basis of grazing all livestock during the season or grazing no livestock during the season.

In TABLE 1 of APPENDIX 3-A effects of management are predicted.

TABLE 1. Effects of Proposed Management by Allotment

VEGETATIVE EFFECTS BY ALLOTMENT

B+ = High Beneficial
B = Beneficial
B- = Low Beneficial
N = No Change
A- = Low Adverse
A = Adverse
A+ = High Adverse
0 = Not Applicable

	VEGETATION													
	CARBOHYDRATE RESERVES		AND PLANT VIGOR		SEED PRODUCED		SEED SHATTERING AND TRAMPLING		SEEDLING ESTABLISHMENT		LITTER ACCUMULATION		Soil Fertility/Plant Growth	
	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable
SQUAW CREEK ALLOTMENT														
Redbird Lake Pasture														
Treatment A Graze 5/21-6/15	A-	N	A-	N	N	N	A-	N	A-	N	B-	A-	A-	A-
Treatment B Rest/Graze 10/1-10/15	B+	B-	B	B-	B-	N	B+	B-	B-	N	N	N	B-	B-
Overall Effect	B	B-	B	B-	B-	N	B	B-	B	B-	B-	A-	B	B
South Butte														
Treatment A Graze 5/21-6/15	A-	N	A-	N	N	N	A-	N	A-	N	B-	A-	A-	A-
Treatment B Rest/Graze 10/1-10/15	B+	B-	B	B-	B-	N	B+	B-	B-	N	N	N	B-	B-
Overall Effect	B	B-	B	B-	B-	N	B	B-	B	B-	B-	A-	B	B
Allotment Overall long term	B	B-	B	B-	B-	N	B	B-	B+	B-	B-	A-	B	B
SPUD CREEK ALLOTMENT														
LMB Spring Pasture														
Treatment A Graze 5/1-7/15	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+
Treatment B Rest/Graze 7/16-9/15	B+	B-	B+	B-	B+	B-	B+	B-	N	N	N	N	N	N
Overall Impact	B	B-	B	B-	B+	B-	B-	N	N	N	B	A	N	N
Joe Jump														
Treatment A Graze 5/1-7/15	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B	A	A-	A-
Treatment B Rest/Graze 7/16-9/15	B+	B-	B+	B-	B+	B-	B+	B-	N	N	N	N	N	N
Overall Effect	B	B-	B	B-	B+	B-	B-	N	N	N	B	A	N	N
Overall Allotment Impact long term	B	B-	B	B-	B+	B-	B	B-	B	B	B	A	B-	B-
PINE CREEK ALLOTMENT														
Pasture #1														
Treatment A Graze 5/16-6/10	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+
Treatment B Rest/Graze 10/1-10/16	B+	B-	B+	B-	B-	N	B+	B-	N	N	N	N	N	N
Overall Effect	B	B-	B	B-	B-	N	B-	N	N	N	B+	A+	N	N
Pasture #2														
Treatment A Graze 5/16-6/10	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B	A	A	A
Treatment B Rest/Graze 10/1-10/16	B+	B-	B+	B-	B-	N	B+	B-	N	N	N	N	N	N
Overall Effect	B	B-	B	B-	B-	N	B-	N	N	N	B	A	N	N
Overall Allotment Effect long term	B	B-	B	B-	B-	N	B	B-	B	B	B	A	B-	B-

	VEGETATION													
	CARBOHYDRATE RESERVES		AND PLANT VIGOR		SEED PRODUCED		SEED SHATTERING AND TRAMPLING		SEEDLING ESTABLISHMENT		LITTER ACCUMULATION		Soil Fertility/Plant Growth	
	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable
EAST FORK ALLOTMENT														
Marco Creek Pasture														
Year 1														
Treatment A Graze 5/21-6/10	B-	N	B-	N	N	N	B-	N	B-	N	N	N	B-	B-
Year 2														
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B	B-	B+	B-	N	N	B+	B+
Overall Effect	B	B-	B	B-	N	N	B	B-	B	B-	N	N	B	B
Boulder Creek Pasture														
Year 1														
Treatment A Graze 5/16-6/10	A	A-	A	A-	N	N	A	A-	A	A-	B-	A-	A+	A+
Treatment B Rest 10/1-10/11	B+	B-	B+	B-	N	N	B+	B-	A	B	N	N	B+	B+
Year 2														
Treatment B Rest/Graze 10/1-10/11	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B+	B-	B+	B-	N	N	B+	B-	A	A-	B-	A-	A	A
Big Lake Pasture														
Year 1														
Treatment B Rest/Graze 10/1-10/7	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
Year 2														
Treatment A Graze 5/16-6/10	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A-	A+	A+
Treatment B Graze 10/1-10/7	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B	B-	B+	B-	N	N	N	N	A	A-	B+	A-	A	A
Overall Allotment Effect long term	B	B-	B+	B-	N	N	B	B-	B	B-	B	A	B	B
(No system - Use same as now exists)														
SULLIVAN CREEK ALLOTMENT - If needed in future system will be:														
Sullivan Creek Pasture														
Treatment A Graze 5/1-8/30 & 10/1-10/15	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B	A	A	A
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B	B-	B	B-	N	N	B-	N	N	N	B	A	N	N
French Creek														
Treatment A Graze 1/1-8/30 & 10/1-10/15	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B	B-	B	B-	N	N	B-	N	N	N	B+	A+	N	N
Overall Allotment Effect long term	B	B-	B	B-	N	N	B	B-	B-	B-	B	A	B-	B-

TABLE 1. Effects of Proposed Management by Allotment (cont.)

VEGETATIVE EFFECTS BY ALLOTMENT

B+ = High Beneficial
B = Beneficial
B- = Low Beneficial
N = No Change
A- = Low Adverse
A = Adverse
A+ = High Adverse
0 = Not Applicable

	VEGETATION													
	CARBOHYDRATE RESERVES		AND PLANT VIGOR		SEED PRODUCED		SEED SHATTERING		AND TRAMPLING		SEEDLING ESTABLISHMENT		LITTER ACCUMULATION	
	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable
SOUTH GARDEN CREEK ALLOTMENT														
Johns Gulch Pasture														
Treatment A Graze 5/15-6/9	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+
Treatment B Rest/Graze 6/10-9/4	B	B-	B	B-	B	B-	B+	B-	A-	N	N	N	B-	B-
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B	B-	B	B-	B	B-	B+	B-	B	B-	B+	A+	B	B
Birch Creek														
Treatment A Graze 5/15-6/9	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+
Treatment B Rest/Graze 6/10-9/4	B	B-	B	B-	B	B-	B+	B-	A+	A-	B	A	A+	A+
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B	B-	B	B-	B	B-	B+	B-	B	B-	B	A	B	B
Wood Creek														
Treatment A Graze 5/15-6/9	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+
Treatment B Rest/Graze 6/10-9/4	B	B-	B	B-	B	B-	B+	B-	A+	A-	B-	A-	A	B
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B	B-	B	B-	B	B-	B+	B-	B	B-	B	A	B	B
Overall Allotment Effect long term	B	B-	B	B-	B	B-	B+	B-	B	B-	B	A	B	B
HILLSIDE AREA														
East Field														
Treatment A Graze 6/1-7/31	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A-	A+	A+
Treatment C Rest Season Long	B+	B-	B+	B-	A-	N	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B	B-	B	B-	A-	N	B-	N	N	N	B+	A-	N	N
West Field														
Treatment A Graze 6/1-7/31	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B	A	A	A
Treatment C Rest Season Long	B+	B-	B+	B-	A-	N	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B	B-	B+	B-	A-	N	B	N	N	N	B	A	N	N
Overall Allotment Effect long term	B	B-	B+	B-	A-	N	B	B-	B	B	B	A	B	B

	VEGETATION													
	CARBOHYDRATE RESERVES		AND PLANT VIGOR		SEED PRODUCED		SEED SHATTERING		AND TRAMPLING		SEEDLING ESTABLISHMENT		LITTER ACCUMULATION	
	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable
BALD MOUNTAIN ALLOTMENT														
Kinnikinic Pasture														
Treatment B Graze 10/1-10/15	B-	N	B-	N	A-	N	N	N	B-	N	N	N	B-	B-
Overall Effect	B-	N	B-	N	A-	N	N	N	B-	N	N	N	B-	B-
Centennial Flat														
Treatment A Graze 5/16-7/15	A-	N	A-	N	N	N	A-	N	A-	N	B-	A-	A-	A-
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B	B-	B	B-	N	N	B	B-	B	B-	B-	A-	B+	B+
Birch Creek														
Treatment A Graze 5/16-7/15	A	A-	A	A-	N	N	A	A-	A	A-	B-	A-	A-	A-
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B	B-	B	B-	N	N	B	B-	B	B-	B-	A-	B+	B+
Allotment Overall long term	B	B-	B	B-	N	N	B	B-	B+	B-	B-	A-	B+	B+
THOMPSON CREEK ALLOTMENT														
Thompson Creek Pasture														
Treatment A Graze 5/16-5/30	B	B-	B	B-	N	N	B	B-	B	B-	N	N	B-	B-
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B	B-	B	B-	N	N	B	B-	B+	B-	N	N	B+	B+
Overall Allotment Effect long term	B	B-	B	B-	N	N	B	B-	B+	B-	N	N	B+	B+
SPLIT HOOF ALLOTMENT														
Woolley Pasture														
Treatment A Graze 5/6-6/16	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B	B-	B	B-	N	N	B-	N	N	N	B+	A+	N	N
Maraffio														
Treatment A Graze 5/16-6/16	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B	A	A	A
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B	B-	B	B-	N	N	B-	N	B-	N	B	A	N	N
Overall Allotment Effect long term	B	B-	B	B-	N	N	B	B-	B	B-	B	A	B-	B-

TABLE 1. Effects of Proposed Management by Allotment (cont.)

VEGETATIVE EFFECTS BY ALLOTMENT

B+ = High Beneficial
B = Beneficial
B- = Low Beneficial
N = No Change
A- = Low Adverse
A = Adverse
A+ = High Adverse
0 = Not Applicable

	VEGETATION															
	CARBOHYDRATE RESERVES AND PLANT VIGOR		SEED PRODUCED		SEED SHATTERING AND TRAMPLING		SEEDLING ESTABLISHMENT		LITTER ACCUMULATION	Soil Fertility/Plant Growth		CONCENTRATING LIVESTOCK	Plants Affected	SOIL COMPACTION		
	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable
WARM SPRINGS ALLOTMENT																
Area I																
Bradbury Flat Pasture																
Treatment A Graze 5/1-6/30	A	A-	A	A-	N	N	A+	A-	A	A-	B-	A-	A-	A-		
Treatment B Rest/Graze 10/1-10/30	B+	B-	B+	B-	B+	B-	B+	B-	A+	A-	B+	B-	A+	A+		
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+		
Overall Effect	B+	B-	B+	B-	B+	B-	B+	B-	B	N	B	N	B-	B-		
Hole-in-the-Rock																
Treatment A Graze 5/1-6/15	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+		
Treatment B Rest/Graze 12/16-1/30	B+	B-	B+	B-	B	B-	B+	B-	A-	N	B-	A-	A-	A-		
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+		
Overall Effect	B+	B-	B+	B-	B	B-	B+	B-	B-	N	B	A	B-	B-		
Gooseberry																
Treatment A Graze 5/1-6/30	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+		
Treatment B Rest/Graze 11/1-1/30	B+	B-	B+	B-	B+	B-	B+	B-	A	A-	B	B-	A+	A+		
Treatment C Rest Season Long																
Overall Effect																
Overall Allotment Effect long term																
WARM SPRINGS ALLOTMENT																
Area II																
Antelope Flat Pasture																
Treatment A Graze 5/16-6/30	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+		
Treatment B Rest/Graze 12/16-1/30	B+	B-	B+	B-	B+	B-	B+	B-	A+	A-	B+	A+	A+	A+		
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+		
Overall Effect	B+	B-	B+	B-	B+	B-	B+	B-	A+	A-	B+	A+	A+	A+		
Spar Canyon																
Treatment A Graze 5/1-7/15	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+		
Treatment B Rest/Graze 10/1-10/15 & 11/1-12/31	B+	B-	B+	B-	B+	B-	B+	B-	A+	A-	B+	A+	A+	A+		
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+		
Overall Effect	B+	B-	B+	B-	B+	B-	B+	B-	A+	A-	B+	A+	A+	A+		
Sheep Creek																
Treatment A Graze 5/16-6/30	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+		
Treatment B Rest/Graze 11/1-1/30	B+	B-	B+	B-	B+	B-	N	N	A+	A-	B+	A+	A+	A+		
Treatment C Rest Season Long	B+	B-	B+	B-	A-	N	N	N	B+	B-	N	N	B+	B+		
Overall Effect	B+	B-	B+	B-	B	B-	A+	A-	A+	A-	B+	A+	A+	A+		
Overall Allotment Effect long term	B+	B-	B+	B-	B+	B-	B	B-	A+	A-	B+	A+	A+	A+		

	VEGETATION															
	CARBOHYDRATE RESERVES AND PLANT VIGOR		SEED PRODUCED		SEED SHATTERING AND TRAMPLING		SEEDLING ESTABLISHMENT		LITTER ACCUMULATION	Soil Fertility/Plant Growth		CONCENTRATING LIVESTOCK	Plants Affected	SOIL COMPACTION		
	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable
WARM SPRINGS ALLOTMENT																
Area II																
Spring Basin Pasture																
Treatment A Graze 7/1-7/31	A-	N	A-	N	B	B-	N	N	A+	A-	B+	A+	A+	A+		
Treatment B Rest/Graze 8/1-10/31	N	N	N	N	B+	B-	N	N	A+	A-	B+	A+	A+	A+		
Treatment C Rest Season Long	N	N	N	N	A-	N	N	N	B+	B-	N	N	B+	B+		
Overall Effect	A-	N	A-	N	B+	B-	N	N	A+	A-	B+	A+	A+	A+		
Broken Wagon																
Treatment A Graze 7/1-7/31	A-	N	A-	N	B	B-	N	N	A+	A-	B+	A+	A+	A+		
Treatment B Rest/Graze 8/1-10/31	N	N	N	N	B+	B-	N	N	A+	A-	B+	A+	A+	A+		
Treatment C Rest Season Long	N	N	N	N	A-	N	N	N	B+	B-	N	N	B+	B+		
Overall Effect	A-	N	A-	N	B+	B-	N	N	A+	A-	B+	A+	A+	A+		
Corral Basin																
Treatment A Graze 7/1-7/31	A-	N	A-	N	B	B-	N	N	A+	A-	B+	A+	A+	A+		
Treatment B Rest/Graze 8/1-10/31	B-	N	B-	N	B+	B-	N	N	A+	A-	B+	A+	A+	A+		
Treatment C Rest Season Long	B-	N	B-	N	A-	N	N	N	B+	B-	N	N	B+	B+		
Overall Effect	B-	N	B-	N	B+	B-	N	N	A+	A-	B+	A+	A+	A+		
Overall Allotment Effect long term	A-	N	A-	N	B+	B-	N	N	A+	A-	B+	A+	A+	A+		
NORTH GARDEN CREEK ALLOTMENT																
Jeffs Creek Pasture																
Treatment A Graze 5/15-10/15	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+		
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+		
Overall Effect	B	B-	B	B-	N	N	N	N	A-	N	B+	A+	A	A		
Klug Gulch																
Treatment A Graze 5/15-10/15	B-	N	B-	N	N	N	B-	N	B-	N	N	N	B-	B-		
Treatment C Rest Season Long	B+	B-	B	B-	N	N	B+	B-	B+	B-	N	N	B+	B+		
Overall Effect	B	B-	B+	B-	N	N	B	B-	B+	B-	N	N	B	B		
Overall Allotment Effect long term	B	B-	B	B-	N	N	B	B-	B	B-	B+	A+	B	B		

TABLE 1. Effects of Proposed Management by Allotment (cont.)

VEGETATIVE EFFECTS BY ALLOTMENT

B+ = High Beneficial
B = Beneficial
B- = Low Beneficial
N = No Change
A- = Low Adverse
A = Adverse
A+ = High Adverse
O = Not Applicable

	VEGETATION															
	CARBOHYDRATE RESERVES	AND PLANT VIGOR	SEED PRODUCED		SEED SHATTERING	AND TRAMPLING	SEEDLING ESTABLISHMENT		LITTER ACCUMULATION	Soil Fertility/Plant Growth	CONCENTRATING LIVESTOCK	Plants Affected	SOIL COMPACTION	Trampling
	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable
ROUND VALLEY ALLOTMENT - ALTERNATIVE B														
Penal Gulch Pasture														
Treatment A Graze 5/1-7/15	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+
Treatment B Rest/Graze 7/16-7/31	B+	B-	B+	B-	B+	B-	B+	B-	A-	N	B-	A-	A-	A-
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B+	B-	B+	B-	B+	B-	B+	B-	A-	N	B	A	A-	A-
Leaton Gulch														
Treatment A Graze 5/1-7/15	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+
Treatment B Rest/Graze 7/16-7/31	B+	B-	B+	B-	B+	B-	B+	B-	A-	N	B-	A-	A-	A-
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B+	B-	B+	B-	B+	B-	B+	B-	A-	N	B	A	A-	A-
Camp Creek														
Treatment A Graze 5/1-7/15	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+
Treatment B Rest/Graze 7/16-7/31	B+	B-	B+	B-	B+	B-	B+	B-	A-	N	B-	A-	A-	A-
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B+	B-	B+	B-	B+	B-	B+	B-	B	N	B	A	B	B
Overall Allotment Effect long term	B+	B-	B+	B-	B+	B-	B+	B-	B	B	B	A	B	B
SAN FELIPE ALLOTMENT (Partial)Horse Basin, Bear Creek, Road Creek, Peck Canyon														
Horse Basin Pasture														
Treatment A Graze 6/10-7/15	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+
Treatment B Rest/Graze 7/16-9/23	B+	B-	B+	B-	B+	B-	B+	B-	A-	N	B-	A-	A-	A-
Treatment C Rest Season Long	B+	B-	B+	B-	A-	A-	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B+	B-	B+	B-	B	N	B+	B-	B	B-	B	A	B	B
Bear Creek														
Treatment A Graze 6/10-7/15	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+
Treatment B Rest/Graze 7/16-9/23	B+	B-	B+	B-	B+	B-	B+	B-	A+	A-	B+	A+	A+	A+
Treatment C Rest Season Long	B+	B-	B+	B-	A-	A-	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B+	B-	B+	B-	B	N	B+	B-	A+	A-	B+	A+	A+	A+
Road Creek & Peck Canyon														
Treatment A Graze 6/10-7/15	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+
Treatment B Rest/Graze 7/16-9/23	B+	B-	B+	B-	B+	B-	B+	B-	A-	N	B-	A-	A	A
Treatment C Rest Season Long	B+	B-	B+	B-	A-	A-	B+	B-	B+	B-	N	N	B+	B+
Overall Effect	B+	B-	B+	B-	B	N	B+	B-	B-	N	B	A	B-	B-
Overall Allotment Effect long term	B+	B-	B+	B-	B	N	B+	B-	B	B	B	A	B-	B-

		VEGETATION														
		CARBOHYDRATE RESERVES	AND PLANT VIGOR	SEED PRODUCED		SEED SHATTERING	AND TRAMPLING	SEEDLING ESTABLISHMENT		LITTER ACCUMULATION	Soil Fertility/Plant Growth	CONCENTRATING LIVESTOCK	Plants Affected	SOIL COMPACTION	Trampling
		Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable
Four Pasture System															
SAN FELIPE ALLOTMENT - (Partial) East Chile, West Chile, East Sage and West Sage Pastures															
West Sage	Treatment A Graze 5/17-6/9	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B	A	A	A
	Treatment B Graze 9/23-9/30 Ex. of Use	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
	Treatment C Graze 5/17-6/9	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B	A	A	A
	Treatment D Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
	Overall Effect	B	N	B	N	N	N	B	N	B	B-	B	A	B-	B-
East Sage	Treatment A Graze 5/17-6/9	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B	A	A	A
	Treatment B Graze 9/23-9/30 Ex. of Use	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
	Treatment C Graze 5/17-6/9	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B	A	A	A
	Treatment D Rest Season Long	B+	B-	B+	B-	N	N	B+	B	B+	B-	N	N	B+	B+
	Overall Effect	B	N	B	N	N	N	B	N	B	B-	B	A	B-	B-
East Chile	Treatment A Graze 5/17-6/10	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A	A
	Treatment B Graze 9/23-9/30 Ex. of Use	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
	Treatment C Graze 5/17-6/9	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A	A
	Treatment D Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
	Overall Effect	B	N	B	N	N	N	B	N	A	A-	B+	A+	A-	A-
West Chile	Treatment A Graze 5/17-6/9	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A	A
	Treatment B Graze 9/23-9/30 Ex. of Use	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
	Treatment C Graze 5/17-6/9	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A	A
	Treatment D Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+
	Overall Effect	B	N	B	N	N	N	B	N	A	A-	B+	A+	A-	A-
Overall Allotment Effect long term		B	N	B	N	N	N	B	N	B-	N	B	A	B-	B-

TABLE 1. Effects of Proposed Management by Allotment (cont.)

VEGETATIVE EFFECTS BY ALLOTMENT

B+ = High Beneficial
B = Beneficial
B- = Low Beneficial
N = No Change
A- = Low Adverse
A = Adverse
A+ = High Adverse
0 = Not Applicable

	VEGETATION														
	CARBOHYDRATE RESERVES		AND PLANT VIGOR		SEED PRODUCED		SEED SHATTERING	AND TRAMPLING	SEEDLING ESTABLISHMENT		LITTER ACCUMULATION	Soil Fertility/Plant Growth	CONCENTRATING LIVESTOCK		Plants Affected	SOIL COMPACTION	Trampling
	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Key Species	Unpalatable
RED LAKE ALLOTMENT																	
Bradshaw Basin Pasture																	
Treatment A Graze 5/16-6/15	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B	A	A	A			
Treatment B Rest/Graze 6/16-8/15	B	B-	B	N	B	B-	B+	B-	A+	A-	B+	A+	A+	A+			
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+			
Overall Effect	B	B-	B	B-	B	B-	B+	B-	B	B-	B	A	B	B			
Bradbury																	
Treatment A Craze 5/16-6/15	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B	A	A	A			
Treatment B Rest/Graze 6/16-8/15	B	B-	B	N	B	B-	B+	B-	A+	A-	B+	A+	A+	A+			
Treatment C Rest Season Long	B+	B-	B+	B	N	N	B+	B-	B+	B-	N	N	B+	B+			
Overall Effect	B	B-	B	B-	B	B-	B+	B-	B	B-	B	A	B	B			
Lone Pine																	
Treatment A Graze 5/16-6/15	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B	A	A	A			
Treatment B Rest/Graze 6/16-8/15	B	B-	B	N	B	B-	B+	B-	A+	A-	B+	A+	A+	B+			
Treatment C Rest Season Long	B+	B-	B+	B	A-	N	B+	B-	B+	B-	N	N	B+	B+			
Overall Effect	B	B-	B	B-	B	B-	B+	B-	B	B-	B	A	B	B			
Overall Allotment Effect long term	B	B-	B	B-	B	B-	B+	B-	B+	B+	B-	A-	B+	B+			
HERD CREEK ALLOTMENT																	
Pine Gulch Pasture																	
Treatment A Graze 6/1-7/31	B-	N	B-	N	N	N	B-	N	B-	N	N	N	B-	B-			
Treatment B Rest/Graze 8/1-10/31	B+	B-	B+	B-	B+	B-	B+	B-	B	B-	N	N	B-	B-			
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+			
Overall Effect	B+	B-	B+	B-	B+	B-	B+	B-	B	B-	N	N	B	B			
Lake Basin																	
Treatment A Graze 6/1-7/31	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+			
Traatment B Rest/Graze 8/1-10/31	B+	B-	B+	B-	B+	B-	B+	B-	A+	A-	B+	A+	A+	A+			
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+			
Overall Effect	B+	B-	B+	B-	B+	B-	B+	B-	A+	A-	B+	A+	A+	A+			
Taylor Creek																	
Treatment A Graze 6/1-7/31	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+			
Treatment B Rest/Graze 8/1-10/31	B+	B-	B+	B-	B+	B-	B+	B-	A+	A-	B+	A+	A+	A+			
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+			
Overall Effect	B+	B-	B+	B-	B+	B-	B+	B	A+	A-	B+	A+	A+	A+			
Overall Allotment Effect long term	B+	B-	B+	B-	B+	B-	B+	B-	B	B-	B+	A+	B-	B-			

	VEGETATION																
	CARBOHYDRATE RESERVES		AND PLANT VIGOR		SEED PRODUCED		SEED SHATTERING	AND TRAMPLING	SEEDLING ESTABLISHMENT		LITTER ACCUMULATION	Soil Fertility/Plant Growth	CONCENTRATING LIVESTOCK		Plants Affected	SOIL COMPACTION	Trampling
	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Unpalatable	Key Species	Key Species	Unpalatable
ROAD CREEK ALLOTMENT																	
Dry Canyon Pasture #1																	
Treatment A Graze 5/1-7/20	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+			
Treatment B Rest/Graze 7/21-8/31	B+	B-	B+	B-	B+	B-	B+	B-	B-	N	N	A+	B-	B-			
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+			
Overall Effect	B+	B-	B+	B-	B+	B-	B+	B-	A-	N	B+	A+	A-	A-			
Dry Canyon Pasture #2																	
Treatment A Graze 5/1-7/20	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+			
Treatment B Rest/Graze 7/21-8/31	B+	B-	B+	B-	B+	B-	B+	B-	B-	N	N	N	B-	B-			
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+			
Overall Effect	B+	B-	B+	B-	B+	B-	B	B-	B+	A+	B-	A+	A-	B-			
(Ziegler Basin Portion of Pasture #2)																	
Treatment A Graze 5/1-6/15	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+			
Treatment B Rest/Graze 7/21-8/31	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+			
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+			
Overall Effect	B+	B-	B+	B-	N	N	B+	B-	A	A-	B+	A+	A	A			
Chicken Creek Pasture #3																	
Treatment A Craze 5/1-7/20	A+	A-	A+	A-	N	N	A+	A-	A+	A-	B+	A+	A+	A+			
Treatment B Rest/Graze 7/21-8/31	B+	B-	B+	B-	B+	B-	B+	B-	B-	N	N	N	B-	B-			
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+			
Overall Effect	B+	B-	B+	B-	B+	B-	B+	B-	A-	N	B+	A+	B-	B-			
Overall Allotment Effect long term	B+	B-	B+	B-	B+	B-	B+	B-	A	A-	B+	A+	A	A			
BRUNO CREEK ALLOTMENT																	
Bruno Creek Pasture																	
Treatment A Graze 5/16-7/20	N	N	N	N	N	N	N	N	N	N	N	N	N	N			
Treatment B Rest/Graze 7/21-9/30	B+	B-	B+	B-	B+	B-	B+	B-	B+	B-	N	N	B+	B+			
Treatment C Rest Season Long	B+	B-	B+	B-	N	N	B+	B-	B+	B-	N	N	B+	B+			
Overall Effect	B+	B-	B+	B-	B+	B-	B+	B-	B+	B-	N	N	B+	B+			
Overall Allotment Effect Long Term	B+	B-	B+	B-	B+	B-	B+	B-	B+	B-	N	N	B+	B+			

Treatment A. Rating vegetation impacts for this treatment was done through direct comparison of the proposed grazing use with what is now occurring. It was assumed that utilizing the same number of AUMs during the Treatment A period would result in no change in plant carbohydrate root reserve storage. More AUMs utilized would result in an adverse impact and less AUMs in a beneficial impact.

Rating Scale*

.50	= B+ (Less than 1/2 as many AUMs)
.51 - .75	= B
.76 - .99	= B-
1.00	N (No change. Same AUMs)
1.01 - 1.25	= A-
1.26 - 1.50	= A
1.51 - 1.50	= A+ (More than 1 1/2 as many AUMs)

*B = Beneficial, A = Adverse, N = No Change

Deferment of grazing or grazing earlier during the spring growing period affects plant vigor. When there was deferment or the grazing use was earlier, the criteria under Treatment B below was considered and evaluated in arriving at the rating applied.

Treatment B. Ratings were applied by comparing proposed rest and grazing use during this treatment with the grazing use which is now being made. In most allotments, rest is proposed until flowering or seedripe (at present, the area is being grazed). In these instances, ratings were assigned based upon the period of rest and carbohydrate reserves normally stored during this period. It was assumed the amount

of carbohydrate storage shown in the rating scale would be accomplished regardless of the numbers of livestock or AUMs grazed after the rest period.

Rating Scale

Deferment	B- More Reserves Stored
Rest to Flowering	B 50% Reserves Stored
Rest to Seedripe	B+ 90% Reserves Stored
Rest Season Long	B+ 100% Reserves Stored

Treatment C. Impacts were rated by comparing rest season-long under the proposal with grazing use now being made during the growing season. Resting the area season-long allows the key species and other plants with similar growth requirements an opportunity to complete their normal growth cycle and make and store maximum food reserves.

Rest Season-Long = B+.

Basis for Determining Rationale

Plants manufacture food material in the leaves which is translocated to roots and other storage organs. These food materials consist largely of carbohydrates and are generally referred to as carbohydrate food reserves. The reserves serve as a source of energy for the plant to perform its normal life functions. Plants draw heavily from stored carbohydrate reserves in the spring to initiate and sustain growth until sufficient green material is produced for photosynthesis. This occurs when the plant is about half grown. From then on as growth develops the plant manufactures increasing amounts of carbohydrates and produces more food than it uses in respiration and growth. The excess is stored.

The effects of grazing upon carbohydrate levels depends upon when the plant is grazed, the number of times it is grazed and the amount of photosynthetic material that remains after grazing. Continued heavy grazing during the growing season lowers the carbohydrate storage level, reduces plant vigor and eventually kills the plant.

Basic assumptions used to determine the effects of the proposal on carbohydrate reserves and plant vigor are:

1. Carbohydrate reserves are lowest when the shoot is about half grown or about the time the plant is growing most rapidly.

> "Defoliation is most harmful when root reserves are lowest. This is about the time the plant is growing most rapidly." (Hormay, 1970)

In the Challis Unit, plant growth is most rapid from approximately May 15 to May 25. If plants are grazed during this period, there is maximum withdrawal of carbohydrate reserves and reduced plant vigor.

2. Removal of leaves any time during the green period reduces the amount of food made and stored by the plant. Constant replacement of tissues removed by grazing requires additional withdrawal of root reserves.

> "Carbohydrate stores are used by the plant for respiration and slight growth during the winter for initial growth and subsequent rapid growth during the spring, and for secondary growth in the fall. If however, the plant is defoliated at any time during growth, the reserves are again utilized for the production of new photosynthetic tissue." (Cook, 1966)

3. Harvesting more forage during early growing season results in less total volume of herbage produced.

> "The combined yield of initial growth and regrowth from plants clipped early in the growing season is less than the yield of growth from unclipped full green plants. Therefore, herbage production and grazing capacity during the season are reduced by early grazing." (Hormay, 1970)

As herbage volume is decreased more total plants must be grazed and/or plants must be grazed more frequently to satisfy livestock forage requirements.

4. Deferment of grazing with the same livestock numbers results in fewer plants grazed and/or less frequent and severe use of the plants grazed during the growing season.

5. Rest from grazing until flowering time allows the key plants an opportunity to store about half of their root reserves. Flowering time for most key species in the Challis Unit is about June 15.

> "Approximately half of the seasonal stores are deposited by the time the shoot is half grown. In grasses and plants of similar growth development this is about flowering time." (Hormay, 1970)

6. Rest from grazing until seedripe time allows most grasses and plants with similar growth requirements an opportunity to store approximately 90% or most of their carbohydrate root reserves.

Average seedripe time for key species in the Challis Unit is about July 15. Refer to TABLE 2 for information concerning phenology data of key vegetation species in the Challis Unit.

Seed Produced

Treatment A. The same rating scale was used for seed produced as for carbohydrate reserves. Grass plants have the opportunity to produce seed if they are not grazed after flower stalks are tall enough to be removed. Flower stalks start to show when the plant starts growing rapidly or about the first week of May in the Challis Unit. The amount

TABLE 2. Phenology of Key Vegetation Species in the Challis Unit.

Plant Species	Start Growth	Boot Stage	Flowering	Seed Ripe	Seed Dissemination
Bluebunch wheatgrass	4/1-4/30	5/15-5/25	5/20-6/30	6/15-8/1	7/20-
Idaho fescue	4/15-5/10	5/20-6/1	6/1-7/15	6/20-8/10	7/25-
Indian ricegrass	4/1-4/15	5/5-5/10	5/5-6/15	5/30-7/10	7/1 -
Sandberg bluegrass	4/10		5/1	5/25	6/30-
Squirreltail	4/5	5/10	6/1	7/10	
June grass	4/15	5/5	5/30	7/5	
Letterman needlegrass	4/10	5/5	5/30	7/1	-
Sand dropsped	4/25	5/30	6/20	7/25	-
Wild rye	4/1-4/15	5/20	6/5-6/15	7/5-7/15	-
Crested wheatgrass	4/1		6/10	7/10	-
Winter fat	4/10		7/1	8/15	10/1
*Big sagebrush	4/15	-	9/15	-	-

*Phenology not known to be exact. Further observations needed.

Phenology data taken from AMPs. Where two figures are shown this represents earliest and latest dates recorded.

of seed produced after this time depends upon the number of livestock grazed and AUMs utilized.

Treatment B. The rating was evaluated in the same manner as for carbohydrate reserves.

Ratings were assigned based upon the period of rest and seed that would be produced. It was assumed if grazing occurs prior to flowering time the majority of seed heads would be grazed and little seed would be produced. It was further assumed the amount of seed produced would vary with the time and number of livestock grazed prior to seedripe. After seedripe, the amount of seed that would be produced would not vary regardless of the number of livestock grazed or AUMs utilized.

Rating Scale (When grazing use is now being made during growing season).

Deferment	B-	
Rest to Flowering	B	(B- if more than twice as many livestock graze after flowering).
Rest to Seedripe	B+	
Rest Season Long	B+	

Treatment C. Impacts were rated by comparing rest season-long, with the grazing use now being made during the growing season.

Resting the area season-long allows the plants an opportunity to complete their normal growth cycle and produce seed.

Rest Season-Long = B+.

Seed Shattering and Trampling. Maximum shattering and trampling of seed into the ground occurs when seed is allowed to fully ripen before livestock begin grazing. The most beneficial effects from shattering

and trampling occur at seedripe. Grazing later than seedripe results in loss of seed from rodents, birds, insects, etc., and deterioration. With the assigned ratings it is assumed that some seed will be allowed to ripen if grazing begins at flowering. Some beneficial impacts will therefore occur if more livestock graze from flowering through seedripe or any time after seedripe until late fall.

Treatment A. If proposed grazing use is made before flowering, the rating assigned is no change, regardless of number of livestock or AUMs grazed. It was assumed if grazing occurs prior to flowering, the majority of the seed stalks will be grazed and little seed would be produced. Livestock affects on seed shattering and trampling would therefore be minimal.

If present grazing is before flowering, and the proposed use is after flowering to or through seedripe, a B rating was assigned. It is assumed if grazing use is made after flowering, considerable seed will have an opportunity to ripen.

Treatment B. When present use is made before flowering, and the proposal provides for deferment or rest until flowering or seedripe, the following ratings were assigned:

Flowering through seedripe	= B
Begin grazing at seedripe	= B+

In some allotments Treatment B is only grazing in the fall. Since some seed will be present in the fall it is assumed more livestock and/or AUMs used will result in more seed trampling.

Rating Scale (Fall only)

Less numbers	= A-
1.01 - 2.00	= B-
2.01 - 3.00	= B
3.01 and over	= B+

Treatment C. When the proposal is rest season-long, the rating assigned is an A- if present use occurs any time from flowering to fall. Some seed would be shattered and trampled during this grazing use while with complete rest it would not. The rating assigned is N (no change) when the proposal is rest season-long and present use occurs prior to flowering time.

Litter Accumulation. It is assumed litter would accumulate at a greater rate with less livestock use and at a slower rate with more livestock use during the same grazing period.

Treatment A.

Rating Scale (percent grazing use)

.50	= B+
.51 - .75	= B
.76 - .99	= B-
1.00	= N
1.01 - 1.25	= A-
1.26 - 1.50	= A
1.51 and over	= A+

Treatment B. Herbage production and volume of forage would be increased through deferment or rest during the growing season. Herbage production of an area if rested to seedripe will be greater than if

rested to flowering. It is assumed if an area is rested until seedripe it will produce twice as much forage as when grazed during the growing season.

The following ratings were used to show impacts when rested to flowering and seedripe if the area is now being grazed during the growing season.

Rating Scale (percent grazing use)

Rest to Flowering		Rest to Seedripe or Later	
.50	= B+	1.00	= B+
.51 - 1.00	= B	1.01 - 1.50	= B
1.01 - 1.49	= B-	1.51 - 1.99	= B-
1.50	= N	2.00	= N
1.51 - 2.00	= A-	2.01 - 3.00	= A-
2.01 - 2.50	= A	3.01 - 3.50	= A
2.51 and over	= A+	3.51 and over	= A+

Treatment C. Rest season-long would allow opportunity for maximum plant material to be deposited on the ground as litter.

Rest Season-Long = B+

Seedling Establishment. Until seedlings develop adventitious roots which help anchor them to the soil, they are subject to severe damage from trampling and pullup. Seedlings develop adventitious roots about flowering time. It is assumed grazing more livestock during the spring until flowering will result in adverse impacts to seedling establishment. Grazing less livestock or deferment would result in beneficial impacts to seedling establishment.

Treatment A.

Rating Scale

.50	= B+
.51 - .75	= B
.76 - .99	= B-
1.00	= N
1.01 - 1.25	= A-
1.26 - 1.50	= A
1.50 and over	= A+

Treatment B. The following rating schedule was used when the area is now being grazed during the spring period, regardless of the number of livestock grazed or AUMs utilized.

Rating Scale

Deferment	= B
Rest to flowering	= B+
Rest to seedripe	= B+

Treatment C. Rest season-long is rated B+ when grazing use is now occurring during the spring period. Rest season-long allows for full seedling establishment without harmful affects from livestock grazing.

Concentrating Livestock Use

Concentrating livestock use in a smaller area results in better distribution of grazing use and more uniform utilization of plant species. This forces utilization of vegetation on previously ungrazed or lightly grazed areas, as well as use of plants that would not otherwise be grazed. The less palatable plants therefore share the grazing load and have a less competitive ecological advantage.

Grazing more livestock will, therefore, have a beneficial impact. It is assumed there would be no change if fewer livestock grazed the same area during the same time period.

Treatment A.

Rating Scale

1.0	= No Change
1.01 - 1.50	= B-
1.51 - 2.00	= B
2.01 and over	= B+

This rating scale was also used when there was no change in the period to the beginning of grazing use during Treatment B.

Treatment B. It is assumed rest until seedripe will increase the total herbage volume about twice as much as when grazed during the growing season. Accordingly, it is assumed that more than twice the number of livestock or AUMs have to be utilized to have a beneficial effect from concentrating use.

Rating Scale

2.00	= No Change
2.01 - 3.00	= B-
3.01 - 4.00	= B
4.01 and over	= B+

Treatment C.

Rest Season-Long = No Change (N)

Soil Compaction - Plant Root Growth

There would be more temporary damage to vegetation associated with livestock trampling and soil compaction due to grazing more livestock. Soil compaction restricts vegetative root growth, reduced water infiltration and permeability, and reduces available water for plant growth. Grazing fewer livestock and using less AUMs during the same period of time would result in less soil compaction. More livestock and AUMs used would result in more soil compaction.

Treatment A.

Rating Scale

.5 - .99	= B-
1.0	= N
1.01 - 1.50	= A-
1.51 - 2.00	= A
2.01 and over	= A+

This schedule was also used when there was no change in the period to the beginning of grazing use during Treatment B. Grazing fewer livestock or deferment would result in less temporary damage to vegetation from livestock trampling and soil compaction. There should be less moisture in the top portions of the soil later in the spring, and therefore less soil compaction. This was evaluated in determining the rating applied.

Treatment B. It was assumed when the area is rested to flowering or seedripe time it will require twice as many AUMs utilized to result in the same soil compaction as when grazed during the spring period.

Rating Scale

.75	= B+
.76 - .99	= B
1.00 - 1.99	= B-
2.00	= N
2.01 - 2.50	= A-
2.51 - 3.00	= A
3.01 and over	= A+

Treatment C.

Rest Season-Long = B+

APPENDIX 3-B

PRESENT USE, APPROXIMATE PRESENT USE BY PASTURE AND PROPOSED USE BY PASTURE FOR THE PROPOSED ACTION

Appendix for 3-B

Present Use of Allotments, Approximate Use by Pasture, and Proposed Use

Vegetation

Red Lake Allotment

Treatment "A"

Present Use (Entire Allotment)

477	C	05/01-06/15	716 AUMs
140	S	05/01-06/15	43 AUMs
100	C	05/12-06/12	104 AUMs
433	C	05/16-06/15	433 AUMs
			1296 AUMs

Approximate Present Use By Pasture

Bradshaw Basin	459 AUMs
Bradbury	421 AUMs
Lone Pine	416 AUMs
	1296 AUMs

Proposed Use

790	C	05/16-06/15	790 AUMs
117	S	05/16-06/15	23 AUMs
			813 AUMs

Use Intensity

Proposed use would be about double the use now being made.

Red Lake Allotment (cont.)

Treatment "B"

Present Use (Entire Allotment)

75	C	06/16-06/30	38 AUMs
140	S	06/16-07/15	27 AUMs
7	C	06/16-07/15	7 AUMs
90	C	06/16-08/21	198 AUMs
101	C	06/16-07/15	101 AUMs
			371 AUMs

Approximate Present Use By Pasture

Bradshaw Basin	130 AUMs
Bradbury Flat	121 AUMs
Lone Pine	120 AUMs
	371 AUMs

Proposed Use

270	C	06/16-08/15	540 AUMs
117	S	06/16-08/15	46 AUMs
			586 AUMs

Use Intensity

Grazing use is now being made from 5/1-6/15 with approximately 1296 AUMs. Under the proposal the pastures would be rested during this period. Proposed use during the treatment period would be about 3-1/3 times more than at present.

Red Lake Allotment (cont.)

Treatment "C"

Approximate Present Use By Pasture

Bradshaw Basin	589 AUMs
Bradbury Flat	542 AUMs
Lone Pine	536 AUMs
	1667 AUMs

Proposed Use - None

Use Intensity

Rest season-long

Herd Creek Allotment

Treatment "A"

Present Use (Entire Allotment)

150	C	05/01-06/30	100%	300 AUMs
17	C	06/01-07/31	100%	34 AUMs
436	C	06/16-07/31	30.3%	198 AUMs
				532 AUMs

Approximate Present Use By Pasture

Pine Gulch	364 AUMs
Lake Basin	70 AUMs
Taylor Creek	98 AUMs
	532 AUMs

Proposed Use

150	C	06/16-06/30	100%	75 AUMs
17	C	06/01-07/31	100%	34 AUMs
436	C	06/16-07/31	30.3%	198 AUMs
				307 AUMs

Use Intensity

Pine Gulch Pasture - Porposed use would be 57 AUMs or about 1/5 less than the present use.

Lake Basin & Taylor Creek - Proposed use would be slightly more than 3 times the present use.

Herd Creek Allotment (cont.)

Treatment "B"

Present Use (Entire Allotment)

436	C	08/01-10/15	30.3%	330 AUMs
436	C	10/16-10/31	100%	218 AUMs
150	C	10/01-10/31	100%	150 AUMs
51	C	08/01-10/15	33.3%	42 AUMs
				740 AUMs

Approximate Present Use By Pasture

Pine Gulch	508 AUMs
Lake Basin	97 AUMs
Taylor Creek	135 AUMs
	740 AUMs

Proposed Use

436	C	08/01-10/15	30.3%	330 AUMs
436	C	10/16-10/31	100%	218 AUMs
150	C	10/01-10/31	100%	150 AUMs
17	C	08/01-10/15	100%	42 AUMs
				740 AUMs

Use Intensity

Pine Gulch Pasture - Grazing use is now being made from 5/1-6/30 with about 364 AUMs. Under the proposal this pasture would be rested during this period. Proposed use during the treatment period would be about 132 AUMs or 1/3 more use than at present.

Herd Creek Allotment (cont.)

Treatment "B" (cont.)

Use Intensity (cont.)

Lake Basin & Taylor Creek Pastures - Grazing use is now being made from 5/1-6/30 with about 84 AUMs. Under the proposal these pastures would be rested during this period. Proposed use during the treatment period would be slightly more than three times the present use.

Treatment "C"

Approximate Present Use By Pasture

Pine Gulch	872 AUMs
Lake Basin	167 AUMs
Taylor Creek	233 AUMs
	1272 AUMs

Proposed Use - None

Use Intensity

Rest season-long

Road Creek Allotment

Treatment "A"

Present Use (Entire Allotment)

43	C	05/10-07/20	101 AUMs
13	C	05/16-06/15	13 AUMs
70	C	05/01-06/15	105 AUMs
209	C	05/05-06/15	286 AUMs
10	H	05/01-07/20	27 AUMs
			532 AUMs

Approximate Present Use By Pasture

Dry Canyon	167 AUMs
Pasture 2 (Ziegler Basin)	186 AUMs
Chicken Creek	179 AUMs
	532 AUMs

Proposed Use

43	C	05/10-07/20	101 AUMs
279	C	05/01-06/15	419 AUMs
32	C	05/01-06/30	65 AUMs
			585 AUMs

Use Intensity

Proposed use would be slightly more than 3 times the present use.

The proposal includes resting the Ziegler Basin part of Pasture 2 two out of three years. Approximate present use in this area in Pasture 2 is 130 AUMs.

Road Creek Allotment (cont.)

Treatment "A" (cont.)

Proposed Use

89	C	05/01-06/15	134 AUMs
43	C	05/10-07/20	101 AUMs
32	C	05/01-06/30	65 AUMs
			300 AUMs

Vegetation

Grazing more livestock - More AUMs used.

Use Intensity

Proposed use would be slightly less than 3 times the present use.

Ziegler Basin Portion of Pasture 2

Ziegler Basin portion of pasture two will be grazed one out of three years.

Approximate present use in this area is 56 AUMs. The year this area is grazed use will be:

190	C	05/01-06/15	285 AUMs

Use Intensity

Proposed use would be about 5 times more than the present use.

Treatment "B"

Present Use (Entire Allotment)

43	C	07/21-08/31	58 AUMs
10	H	07/21-11/15	38 AUMs
			96 AUMs

Road Creek Allotment (cont.)

Treatment "B" (cont.)

Approximate Present Use By Pasture

Dry Canyon	30 AUMs
Pasture 2 (Ziegler Basin)	34 AUMs
Chicken Creek	32 AUMs
	96 AUMs

Proposed Use

43	C	07/21-08/31	58 AUMs

Use Intensity

Grazing use is now being made from 5/1-7/20 with about 177 AUMs. Under the proposal the pastures would be rested during this period. Proposed use during this treatment is about 2 times more than at present.

Ziegler Basin Portion of Pasture 2

Treatment B for this area is rest season-long.

Use Intensity

Rest season-long

Road Creek Allotment (cont.)

Treatment "C"

Approximate Present Use By Pasture

Dry Canyon	197 AUMs
Pasture 2 (Ziegler Basin)	220 AUMs
Chicken Creek	211 AUMs
	628 AUMs

Proposed Use - None

Use Intensity

Vegetation

Rest season-long

Bruno Creek Allotment

Treatment "A"

Present Use

35	C	05/16-07/20	80%	62 AUMs

Proposed Use

35	C	05/16-07/20	80%	62 AUMs

The total allotment is one pasture with the different treatments applied to the pasture each year in accordance with the schedule. This treatment will have no impact.

Treatment "B"

Present Use

35	C	07/21-09/30	80%	67 AUMs

Proposed Use

35	C	07/21-09/30	80%	67 AUMs

Use Intensity

Grazing use is now being made from 5/16-7/20 with 62 AUMs. Under the proposal the pasture would be rested during this period. Proposed use will be the same as at present.

Treatment "C"

Present Use - 130 AUMs

Proposed Use - None

Use Intensity

Rest season-long

Round Valley Allotment

Treatment "A"

Present Use (Entire Allotment)

225	C	05/01-05/15	112 AUMs
420	C	05/16-05/31	210 AUMs
300	C	06/01-06/15	150 AUMs
80	C	06/16-07/15	80 AUMs
180	S	07/01-07/15	18 AUMs
			570 AUMs

Approximate Present Use By Pasture

Penal Gulch	168 AUMs
Leaton Gulch	180 AUMs
Camp Creek	222 AUMs
	570 AUMs

Proposed Use

90	C	05/01-05/15	45 AUMs
361	C	05/16-06/15	361 AUMs
69	C	06/16-07/15	69 AUMs
154	S	05/01-07/15	77 AUMs
			552 AUMs

Use Intensity

Proposed use would be almost 3 times more than the present use.

Round Valley Allotment (cont.)

Present Use (Entire Allotment)

80 C	07/16-07/31	40 AUMs
180 S	07/16-07/31	18 AUMs
		58 AUMs

Approximate Present Use By Pasture

Penal Gulch	17 AUMs
Leaton Gulch	18 AUMs
Camp Creek	23 AUMs
	58 AUMs

Proposed Use

69 C	07/16-07/31	35 AUMs
154 S	07/16-07/31	15 AUMs
		50 AUMs

Use Intensity

Grazing use is now being made from 5/1-7/15 with about 190 AUMs. Under the proposal the pastures would be rested during this period. Proposed use during this treatment is about 3 times more than at present.

Round Valley Allotment (cont.)

Treatment "C"

Approximate Present Use By Pasture

Penal Gulch	185 AUMs
Leaton Gulch	198 AUMs
Camp Creek	245 AUMs
	628 AUMs

Proposed Use - None

Use Intensity

Rest season-long

San Felipe Allotment

(Partial-Horse Basin, Bear Cr., Road, Cr., Peck Canyon.) Peck Canyon use will be combined with the other pastures in the system. It is also used for trailing.

Treatment "A"

Present Use (Area)

800 C	06/10-07/15	934 AUMs

Approximate Present Use By Pasture

Horse Basin	398 AUMs
Bear Creek	213 AUMs
Road Creek	197 AUMs
Peck Canyon	126 AUMs
	934 AUMs

Proposed Use

800 C	06/10-07/15	934 AUMs

Use Intensity

Proposed use would be more than twice as much in the Horse Basin pasture and about 4 times more in the Bear Creek and Road Creek pastures.

Treatment "B"

Present Use (Area)

800 C	07/16-09/23	1813 AUMs

Approximate Present Use By Pasture

Horse Basin	772 AUMs
Bear Creek	383 AUMs
Road Creek	413 AUMs
Peck Canyon	245 AUMs
	1813 AUMs

San Felipe Allotment (cont.)

Treatment "B" (cont.)

Proposed Use

800 C 07/16-09/23 1813 AUMs

Use Intensity (All Pastures)

Grazing use is now being made from 6/10-7/15 with about 300 AUMs. Under the proposal the pastures would be rested during this period. Proposed use during this treatment is about 3 times more than at present.

Treatment "C"

Approximate Present Use By Pasture

Horse Basin	1170 AUMs
Bear Creek	596 AUMs
Road Creek	610 AUMs
Peck Canyon	371 AUMs
	2747 AUMs

Proposed Use - None

Use Intensity

Rest season-long

San Felipe - Four Pasture Grazing System

(East Chile, West Chile, East Sage and West Sage Pasture)

Present Use

800 C	05/17-06/09	640 AUMs

Approximate Present Use By Pasture

West Sage	180 AUMs
East Sage	187 AUMs
West Chile	144 AUMs
East Chile	129 AUMs
	640 AUMs

Proposed Use - Each Pasture

Year 1 - Treatment "A"	400 C	05/17-06/09	320 AUMs
Year 2 - Treatment "B"	800 C	09/23-09/30	(160 AUMs)
(This treatment exchange of use - no impact)			
Year 3 - Treatment "C"	400 C	05/17-06/09	320 AUMs
Year 4 - Treatment "D"	Rest season-long.		
			640 AUMs

Use Intensity

Treatments "A" and "C"

West Sage and East Sage Pastures - Proposed use would be less than two times the use now being made.

West Chile and East Chile - Proposed use would be more than two times the use now being made.

Treatment "B"

Proposed grazing use is based upon exchange of use on private lands; therefore, no impact on BLM lands.

San Felipe - Four Pasture Grazing System (cont.)

Use Intensity (cont.)

Treatment "D"

Grazing use is now being made with 640 AUMs. Under the proposal no use would be made during this treatment.

Warm Springs Allotment - Area I

(Bradbury Flat, Hole in Rock, Gooseberry)

Bradbury Flat Pasture

Treatment "A"

Present Use

616 C	05/01-06/30	1232 AUMs

Proposed Use

1000 C	05/01-05/30	1000 AUMs
1025 C	06/01-06/15	513 AUMs
525 C	06/16-06/30	263 AUMs
		1776 AUMs

Use Intensity

Proposed use would be almost 1-1/2 times more than present use.

Treatment "B"

Present Use - None

Proposed Use

450 C	10/01-10/15	225 AUMs
650 C	11/01-12/15	975 AUMs
450 C	12/16-01/30	675 AUMs
		1875 AUMs

Use Intensity

Grazing use is now being made from 5/1-6/30 with 1232 AUMs. Under the proposal the pastures would be rested during this period. Proposed use during this treatment is 1875 AUMs while no use is being made at present.

Warm Springs Allotment - Area I (cont.)

Bradbury Flat Pasture (cont.)

Treatment "C"

Present Use - 1232 AUMs

Proposed Use - None

Use Intensity

Rest season-long

Hole in Rock Pasture

Treatment "A"

Present Use

750 C	05/01-05/20	500 AUMs

Proposed Use

1000 C	05/01-06/15	1500 AUMs

Use Intensity

Proposed use would be 3 times more than present use.

Treatment "B"

Present Use

150 C	11/01-12/15	225 AUMs
750 C	12/01-12/15	375 AUMs
		600 AUMs

Proposed Use

1000 C	12/16-01/30	1500 AUMs

Use Intensity

Grazing use is now being made from 5/1-5/20 with 500 AUMs. Under the proposal the pastures would be rested during this period. Proposed use during this treatment is more than 2 times more than present use.

Warm Springs Allotment - Area I (cont.)

Hole in Rock Pasture (cont.)

Treatment "C"

Present Use - 1100 AUMs

Proposed Use - None

Use Intensity

Rest season-long

Gooseberry Pasture

Treatment "A"

Present Use

750 C	05/21-06/10	500 AUMs

Proposed Use

550 C	05/01-06/30	1100 AUMs

Use Intensity

Proposed use would be more than 2 times more than present use.

Treatment "B"

Present Use

150 C	11/01-12/15	225 AUMs
750 C	11/16-11/30	375 AUMs
		600 AUMs

Proposed Use

300 C	11/01-12/15	450 AUMs
1000 C	12/16-01/30	1500 AUMs
		1950 AUMs

Warm Springs Allotment - Area I (cont.)

Gooseberry Pasture (cont.)

Treatment "B" (cont.)

Use Intensity

Grazing use is now being made from 5/21-6/10 with 500 AUMs. Under the proposal the pastures would be rested during this period. Proposed use during this treatment is more than 3 times more than present use.

Treatment "C"

Present Use - 1100 AUMs

Proposed Use - None

Use Intensity

Rest season-long

Warm Springs Allotment - Area II

(Antelope Flat, Spar Canyon, Sheep Creek)

Antelope Flat Pasture

Treatment "A"

Present Use

225 C	05/01-06/30	450 AUMs

Proposed Use

500 C	05/16-05/30	250 AUMs
800 C	06/01-06/15	400 AUMs
1300 C	06/16-06/30	650 AUMs
		1300 AUMs

Use Intensity

Proposed use will be more than 4 times more than present use.

Treatment "B"

Present Use - None

Proposed Use

1000 C	12/16-01/30	1500 AUMs

Use Intensity

Grazing use is now being made from 5/1-6/30 with 450 AUMs. Under the proposal the pastures would be rested during this period. Proposed use during this period is 1500 AUMs while no use is being made at present.

Warm Springs Allotment - Area II (cont.)

Antelope Flat Pasture (cont.)

Treatment "C"

Present Use - 450 AUMs

Proposed Use - None

Use Intensity

Rest season-long

Spar Canyon Pasture

Treatment "A"

Present Use

325 C	05/01-06/30	650 AUMs

Proposed Use

450 C	05/01-05/15	225 AUMs
950 C	05/16-05/30	475 AUMs
1250 C	06/01-06/15	625 AUMs
750 C	06/16-06/30	375 AUMs
550 C	07/01-07/15	275 AUMs
		1975 AUMs

Use Intensity

Proposed use will be 3 times more than present use.

Treatment "B"

Present Use

550 C	10/16-10/31	275 AUMs

Proposed Use

450 C	10/01-10/15	225 AUMs
900 C	11/01-12/15	1350 AUMs
		1575 AUMs

Warm Springs Allotment - Area II (cont.)

Spar Canyon Pasture (cont.)

Treatment "B" (cont.)

Use Intensity

Grazing use is now being made from 5/1-6/30 with 650 AUMs. Under the proposal the pasture would be rested during this period. Proposed use during this treatment would be almost 6 times more than at present.

Treatment "C"

Present Use - 925 AUMs

Proposed Use - None

Use Intensity

Rest season-long

Sheep Creek Pasture

Treatment "A"

Present Use

750 C	06/11-06/30	500 AUMs

Proposed Use

500 C	05/16-05/30	250 AUMs
775 C	06/01-06/30	775 AUMs
		1025 AUMs

Use Intensity

Proposed use will be slightly more than 2 times more than present use.

Warm Springs Allotment - Area II (cont.)

Sheep Creek Pasture (cont.)

Treatment "B"

Present Use - None

Proposed Use

550 C 11/01-01/30 1650 AUMs

Use Intensity

Grazing is now being made from 6/11-6/30 with 500 AUMs. Under the proposal the pastures would be rested during this period. Proposed use during this treatment is 1650 AUMs while no use is being made at present.

Treatment "C"

Present Use - 500 AUMs

Proposed Use - None

Use Intensity

Rest season-long

Warm Springs Allotment - Area III

(Spring Basin, Broken Wagon, Corral Basin)

Spring Basin Pasture

Treatment "A"

Present Use - None

Proposed Use

1000 C	07/01-07/15	500 AUMs
775 C	07/16-07/31	388 AUMs
		888 AUMs

Use Intensity

No grazing use is being made at present during this treatment.

Treatment "B"

Present Use

750 C	08/01-08/31	750 AUMs

Proposed Use

775 C	08/01-10/31	2325 AUMs

Use Intensity

No present grazing use is being made from 7/1-7/31. Under the proposal the pasture would be rested during this period. Proposed use during this treatment is more than 3 times more than at present.

Treatment "C"

Present Use - 750 AUMs

Proposed Use - None

Use Intensity

Rest season-long

Warm Springs Allotment - Area III (cont.)

Broken Wagon Pasture

Treatment "A"

Present Use - None

Proposed Use

1000 C	07/01-07/15	500 AUMs
775 C	07/16-07/31	388 AUMs
		888 AUMs

Use Intensity

No grazing use is being made at present during this treatment.

Treatment "B"

Present Use

750 C	09/01-09/30	750 AUMs

Proposed Use

775 C	08/01-10/31	2325 AUMs

Use Intensity

No grazing use is being made from 7/1-7/31. Under the proposal the pasture would be rested during this period. Proposed use during this treatment is more than 3 times more than at present.

Treatment "C"

Present Use - 750 AUMs

Proposed Use - None

Use Intensity

Rest season-long

Warm Springs Allotment - Area III (cont.)

Corral Basin Pasture

Treatment "A"

Present Use

616 C	07/01-07/10	205 AUMs

Proposed Use

450 C	07/01-07/15	225 AUMs
775 C	07/16-07/31	388 AUMs
		613 AUMs

Use Intensity

Proposed use would be slightly less than 3 times present use.

Treatment "B"

Present Use

750 C	10/01-10/31	750 AUMs

Proposed Use

775 C	08/01-10/31	2325 AUMs

Use Intensity

Grazing use is now being made from 7/1-7/10 with 205 AUMs. Under the proposal the pasture will be rested during this period. Proposed use during this treatment is more than 3 times present use.

Treatment "C"

Present Use - 955 AUMs

Proposed Use - None

Use Intensity

Rest season-long

South Garden Creek Allotment

Treatment "A"

Present Use (Entire Area)

248 C	05/01-05/05	42 AUMs
389 C	05/06-05/10	65 AUMs
512 C	05/11-05/30	342 AUMs
574 C	06/01-06/05	96 AUMs
453 C	06/06-06/10	76 AUMs
		621 AUMs

Approximate Present Use By Pasture

Johns Gulch	287 AUMs
Birch Creek	153 AUMs
Wood Creek	181 AUMs
	621 AUMs

Proposed Use

414 C	05/15-06/09	345 AUMs

Use Intensity

Grazing use would be more than 2 times as much in the John Gulch Pasture and about 4 times as much in the Birch Creek and Wood Creek Pastures.

South Garden Creek Allotment (cont.)

Treatment "B"

Present Use (Entire Area)

403 C	06/11-06/30	268 AUMs
249 C	07/01-07/05	41 AUMs
69 C	07/06-07/15	23 AUMs
51 C	07/16-12/15	51 AUMs
20 C	08/16-09/20	24 AUMs
20 C	10/01-12/15	50 AUMs
		457 AUMs

Approximate Present Use By Pasture

Johns Gulch	212 AUMs
Birch Creek	112 AUMs
Wood Creek	133 AUMs
	457 AUMs

Proposed Use

288 C	06/10-07/04	231 AUMs
66 C	07/05-09/04	136 AUMs
		367 AUMs

Use Intensity

Grazing use is now being made from 5/1-6/9 with 621 AUMs. Under the proposal the pastures would be rested during this period. Proposed use during this treatment is almost 2 times more than at present for the Johns Gulch Pasture and about 3 times more than at present for the Birch Creek and Wood Creek Pastures.

South Garden Creek Allotment (cont.)

Treatment "C"

Approximate Present Use By Pasture

Johns Gulch	499 AUMs
Birch Creek	265 AUMs
Wood Creek	314 AUMs
	1078 AUMs

Proposed Use - None

Use Intensity

Vegetation - Rest season-long

North Garden Creek Allotment

Treatment "A"

Present Use

29 C	05/01-05/31	29 AUMs
10 C	05/11-06/30	17 AUMs
95 C	05/11-07/10	190 AUMs
155 C	05/16-06/15	155 AUMs
30 C	05/05-06/04	30 AUMs
8 C	05/01-07/31	24 AUMs
5 H	05/01-09/30	25 AUMs
33 H	05/11-06/30	55 AUMs
10 H	06/01-08/31	30 AUMs
10 H	05/01-05/31	10 AUMs
10 H	09/01-10/15	15 AUMs
		580 AUMs

Approximate Present Use By Pasture

Jeffs Creek	179 AUMs
Klug Gulch	401 AUMs
	580 AUMs

Proposed Use

124 C	05/15-06/09	104 AUMs
22 H	05/15-07/05	37 AUMs
64 C	05/15-07/14	128 AUMs
8 H	06/01-10/15	36 AUMs
5 C	05/15-08/14	15 AUMs
20 C	05/15-06/14	20 AUMs

North Garden Creek Allotment (cont.)

Treatment "A" (cont.)

Proposed Use (cont.)

3 H	05/15-10/15	15 AUMs
19 C	05/15-06/14	19 AUMs
		374 AUMs

Use Intensity

Proposed use in the Jeffs Creek Pasture would be slightly more than twice the present use. Proposed use in the Klug Gulch would be slightly less than the use now being made.

Treatment "C"

Present Use

29 C	05/01-05/31	29 AUMs
10 C	05/11-06/30	17 AUMs
95 C	05/11-07/10	190 AUMs
155 C	05/16-06/15	155 AUMs
30 C	05/05-06/04	30 AUMs
8 C	05/01-07/31	24 AUMs
5 H	05/01-09/30	25 AUMs
33 H	05/11-06/30	55 AUMs
10 H	06/01-08/31	30 AUMs
10 H	05/01-05/31	10 AUMs
10 H	09/01-10/15	15 AUMs
		580 AUMs

North Garden Creek Allotment (cont.)

Treatment "C" (cont.)

Approximate Present Use By Pasture

Jeffs Creek	179 AUMs
Klug Gulch	401 AUMs
	580 AUMs

Proposed Use - Complete rest

Use Intensity

Rest season-long

North Garden Creek Allotment - Hillside Area

Treatment "A"

Present Use

30 C	06/01-07/31	25%	15 AUMs

Approximate Present Use By Pasture

East Field	7 AUMs
West Field	8 AUMs
	15 AUMs

Proposed Use

30 C	06/01-07/31	25%	15 AUMs

Use Intensity

Proposed use would be about double the use now being made.

Treatment "C"

Present Use

30 C	06/01-07/31	25%	15 AUMs

Approximate Present Use By Pasture

East Field	7 AUMs
West Field	8 AUMs
	15 AUMs

Proposed Use - Complete rest

Use Intensity

Rest season-long

Bald Mountain Allotment

Treatment "A"

Present Use

294	C	05/01-06/15	442 AUMs
6	H	05/01-09/30	30 AUMs
117	C	05/12-05/30	74 AUMs
75	C	05/16-07/15	150 AUMs
60	C	05/30-07/15	92 AUMs
			788 AUMs

Approximate Present Use By Pasture

Centennial Flat	409 AUMs
Birch Creek	379 AUMs
Kinnikinic	0 AUMs
	788 AUMs

Proposed Use

150	C	05/16-06/15	150 AUMs
158	C	05/16-07/15	316 AUMs
6	H	05/01-09/30	30 AUMs
			496 AUMs

The Centennial Flat and Birch Creek Pastures only will be grazed during the spring period every other year with the above proposed use. The Kinnikini Pasture will only be used in the fall (Treatment "B") from 10/01-10/15 every year.

Use Intensity

Centennial Flat and Birch Creek - Proposed use would be about 1/4 more than is now being made.

Bald Mountain Allotment (cont.)

Treatment "A" (cont.)

Use Intensity (cont.)

Kinnikinic - No present use is being made during this treatment period and no use is proposed.

Treatments "B" and "C"

Present Use

472 C	10/01-10/10	187 AUMs

Approximate Present Use By Pasture

Centennial Flat	0 AUMs
Birch Creek	0 AUMs
Kinnikinic	187 AUMs
	187 AUMs

Proposed Use

Centennial Flat - Rest season-long

Birch Creek - Rest season-long

Kinnikinic - 320 C	10/01-10/15	164 AUMs

Use Intensity

Centennial Flat and Birch Creek - Grazing use is now being made from 5/1 to 7/15 with 788 AUMs. Under the proposal the pastures would be rested during this period. There would be no proposed or present use during this treatment.

Kinnikinic - Proposed Use during this treatment would be about 1/8 or 23 AUMs less use than at present.

Thompson Creek Allotment

Treatment "A"

Present Use

67 C	05/16-05/30	50%	17 AUMs

Approximate Grazing Capacity - 178 AUMs

Proposed Use

34 C	05/16-05/30	50%	9 AUMs

The Thompson Creek Allotment is used in conjunction with two grazing areas on the Challis National Forest. In connection with the Forest Service use the Thompson Creek area will be used every other year according to the above proposed use.

Use Intensity

Proposed use would be about 1/2 the use now being made in one year. The next year no use would be made during this period compared to 17 AUMs use now being made.

Treatment "C"

Present Use

67 C	06/01-10/15	50%	153 AUMs

Approximate Grazing Capacity - 178 AUMs

Proposed Use - None

The Thompson Creek Allotment NRL will only be used every other year with 34 C, 05/16-05/30, 50%, 9 AUMs.

Use Intensity

Grazing use is now being made from 5/16 to 5/30 with 17 AUMs. Under the proposal the pasture would be rested during this period. During the treatment period there would be no use proposed compared to 153 AUMs use now being made.

Split Hoof Allotment

Treatment "A"

Present Use

188 C	05/01-06/15	282 AUMs

Approximate Present Use By Pasture

Woolley	135 AUMs
Maraffio	147 AUMs
	282 AUMs

Proposed Use

282 C	05/16-06/15	282 AUMs

Use Intensity

Proposed use would be about double the use now being made.

Treatment "C"

Present Use

188 C	05/01-06/15	282 AUMs

Proposed Use - None

Use Intensity

Grazing use is now being made from 5/1 to 6/15 with 282 AUMs. Under the proposal the pastures would be rested during this period. Proposed use during the treatment period would be rested the same as at present.

Squaw Creek Allotment

Treatment "A"

Present Use

365 C	05/16-06/15	365 AUMs

Approximate Present Use By Pasture

Redbird Lake	182 AUMs
South Butte - Saturday Mt.	183 AUMs
	365 AUMs

Proposed Use

173 C	05/21-06/15	227 AUMs

Use Intensity

Proposed use would be about 1.2 times the use now being made.

Treatment "B"

Present Use

316 C	10/01-10/15	159 AUMs

Approximate Present Use By Pasture

Redbird Lake	79 AUMs
South Butte	80 AUMs
	159 AUMs

Proposed Use

273 C	10/01-10/15	137 AUMs

Use Intensity

Grazing use is now being made from 5/16 to 6/15 with 365 AUMs. Under the proposal the pasture would be rested during this period. During the treatment period there would be slightly less use than is now being made.

Spud Creek Allotment

Treatment "A"

Present Use

82 C	05/01-05/31	82 AUMs
50 C	05/16-06/15	50 AUMs
22 C	05/16-07/15	44 AUMs
50 S	05/01-07/15	25 AUMs
		201 AUMs

Approximate Present Use By Pasture

LMB Spring	100 AUMs
Joe Jump	101 AUMs
	201 AUMs

Proposed Use

82 C	05/16-06/15	82 AUMs
50 C	05/16-06/15	50 AUMs
22 C	05/16-07/15	44 AUMs
50 S	05/01-07/15	25 AUMs
		201 AUMs

Use Intensity

Proposed use would be about double the use now being made.

Treatment "B"

Present Use

22 C	07/16-09/15	44 AUMs
50 S	07/16-09/15	20 AUMs
		64 AUMs

Spud Creek Allotment (cont.)

Treatment "B" (cont.)

Approximate Present Use By Pasture

LMB Spring	32 AUMs
Joe Jump	32 AUMs
	64 AUMs

Proposed Use

22 C	07/16-09/15	44 AUMs
50 S	07/16-09/15	20 AUMs
		64 AUMs

Use Intensity

Grazing use is now being made from 5/1 to 7/15 with 201 AUMs. Under the proposal the pastures would be rested during this period. Proposed use during the treatment period would be about 2 times more than at present.

Pine Creek Allotment

Treatment "A"

Present Use

130 C	05/16-06/10	109 AUMs
2 H	05/16-06/10	2 AUMs
		111 AUMs

Approximate Present Use By Pasture

Pasture #1	55 AUMs
Pasture #2	56 AUMs
	111 AUMs

Proposed Use

130 C	05/16-06/10	109 AUMs
2 H	05/16-06/10	2 AUMs
		111 AUMs

Use Intensity

Proposed use would be about double the use now being made.

Treatment "B"

Present Use

130 C	10/01-10/16	69 AUMs
2 H	10/01-10/16	1 AUMs
		70 AUMs

Approximate Present Use By Pasture

Pasture #1	35 AUMs
Pasture #2	35 AUMs
	70 AUMs

Pine Creek Allotment (cont.)

Treatment "B" (cont.)

Proposed Use

130	C	10/01-10/16	69 AUMs
2	H	10/01-10/16	1 AUMs
			70 AUMs

Use Intensity

Grazing use is now being made from 5/16 to 6/10 with 111 AUMs. Under the proposal the pasture would be rested during this period. Proposed use during the treatment period would be about 2 times more than at present.

East Fork Allotment

Treatment "A"

Present Use

199 C	05/16-06/10	166 AUMs
186 C	05/01-05/19	118 AUMs
68 C	05/11-06/10	68 AUMs
2 H	05/01-05/15	1 AUMs
		353 AUMs

Approximate Present Use By Pasture

Marco	129 AUMs
Big Lake	109 AUMs
Boulder Creek	115 AUMs
	353 AUMs

Proposed Use

Marco Pasture

Year 1 - 160 C	05/21-06/10	109 AUMs

Year 2 - Complete rest

Boulder Creek

Year 1 - 254 C	05/16-05/31	127 AUMs
68 C	06/01-06/10	23 AUMs
2 H	05/16-05/30	1 AUMs
		151 AUMs

Year 2 - None

East Fork Allotment (cont.)

Treatment "A" (cont.)

Proposed Use (cont.)

Big Lake

Year 1 - None

Year 2 -	160 C	05/16-06/10	134 AUMs
	254 C	05/16-05/31	127 AUMs
	68 C	06/01-06/10	23 AUMs
	2 H	05/16-05/30	1 AUMs
			285 AUMs

Use Intensity

Marco Pasture

Year 1 - Grazing use would be with about 20 AUMs or 1/6 less than at present.

Year 2 - Under the proposal there would be no grazing use compared with 129 AUMs at present.

Boulder Creek

Year 1 - Grazing use would be slightly less than 1-1/2 times as much as at present.

Year 2 - There would be no grazing use compared with 115 AUMs at present.

Big Lake

Year 1 - There would be no grazing use compared with 109 AUMs at present.

Year 2 - Grazing use would be more than 2-1/2 times as much as at present.

East Fork Allotment (cont.)

Treatments "B" and "C"

Present Use

199 C	10/01-10/07	47 AUMs
186 C	10/01-10/11	68 AUMs
68 C	10/01-10/15	34 AUMs
		149 AUMs

Approximate Present Use By Pasture

Marco	55 AUMs
Big Lake	46 AUMs
Boulder	48 AUMs
	149 AUMs

Proposed Use

Marco Pasture

Year 1 - None

Year 2 - None

Big Lake

Year 1 - 199 C	10/01-10/07	47 AUMs
Year 2 - 199 C	10/01-10/07	47 AUMs

Boulder Creek

Year 1 - 254 C	10/01-10/11	94 AUMs
68 C	10/01-10/11	25 AUMs
		119 AUMs
Year 2 - 254 C	10/01-10/11	94 AUMs
68 C	10/01-10/11	25 AUMs
		119 AUMs

East Fork Allotment (cont.)

Treatments "B" and "C" (cont.)

Use Intensity

Marco Pasture

Year 1 - Grazing use is now being made for 5/16 to 6/10 with 129 AUMs. Under the proposal the pasture would be rested during this period. During the treatment period there would be no use proposed compared to 55 AUMs use now being made.

Year 2 - Same as year 1.

Big Lake

Year 1 - Grazing use is now being made from 5/16 to 6/10 with 109 AUMs. Under the proposal the pasture would be rested during this period. During the treatment period there will be the same grazing use as is now being made.

Year 2 - Same as year 1.

Boulder Creek

Year 1 - Grazing use is now being made from 5/16 to 6/10 with 115 AUMs. Under the proposal the pasture would be rested during this period. During the treatment period there will be the same grazing use as is now being made.

Year 2 - Same as year 1.

Sullivan Creek Allotment (No System)

Present Use

32 C	05/01-05/31	32 AUMs
3 H	06/01-08/30	9 AUMs
31 C	10/01-10/15	16 AUMs
30 C	05/16-07/15	50 AUMs
		107 AUMs

Proposed grazing use will remain the same as now exists. However, if resource management objectives are not maintained in the future, the Sullivan Creek and French Creek areas will be used as two separate pastures as follows:

Present Use By Pasture

Sullivan Creek -	32 C	05/01-05/31	32 AUMs
	3 H	06/01-08/30	9 AUMs
	31 C	10/01-10/15	16 AUMs
			59 AUMs
French Creek -	30 C	05/16-07/15	50 AUMs

Proposed Use

Treatment "A" -	32 C	05/01-05/31	32 AUMs
	3 H	06/01-08/30	9 AUMs
	31 C	10/01-10/15	16 AUMs
	30 C	05/16-07/15	50 AUMs
			107 AUMs

Use Intensity

Proposed use would be about double the use now being made.

Treatment "C" - Rest season-long

Sullivan Creek Allotment (cont.)

Use Intensity

Grazing use is now being made with 107 AUMs. Under the proposal there will be no use during this treatment.

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DEPARTMENT OF THE INTERIOR
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CHALLIS PLANNING UNIT

SALMON DISTRICT
IDAHO

IMPROVEMENTS TO BE CONSTRUCTED

LEGEND

PLANNING UNIT BOUNDARY

MAJOR HARD SURFACE ROAD

SECONDARY ROAD

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SPRING DEVELOPMENT OR IMPROVEMENT

STORAGE TANKS

WATER CATCHMENT

VEGETATIVE MANIPULATION

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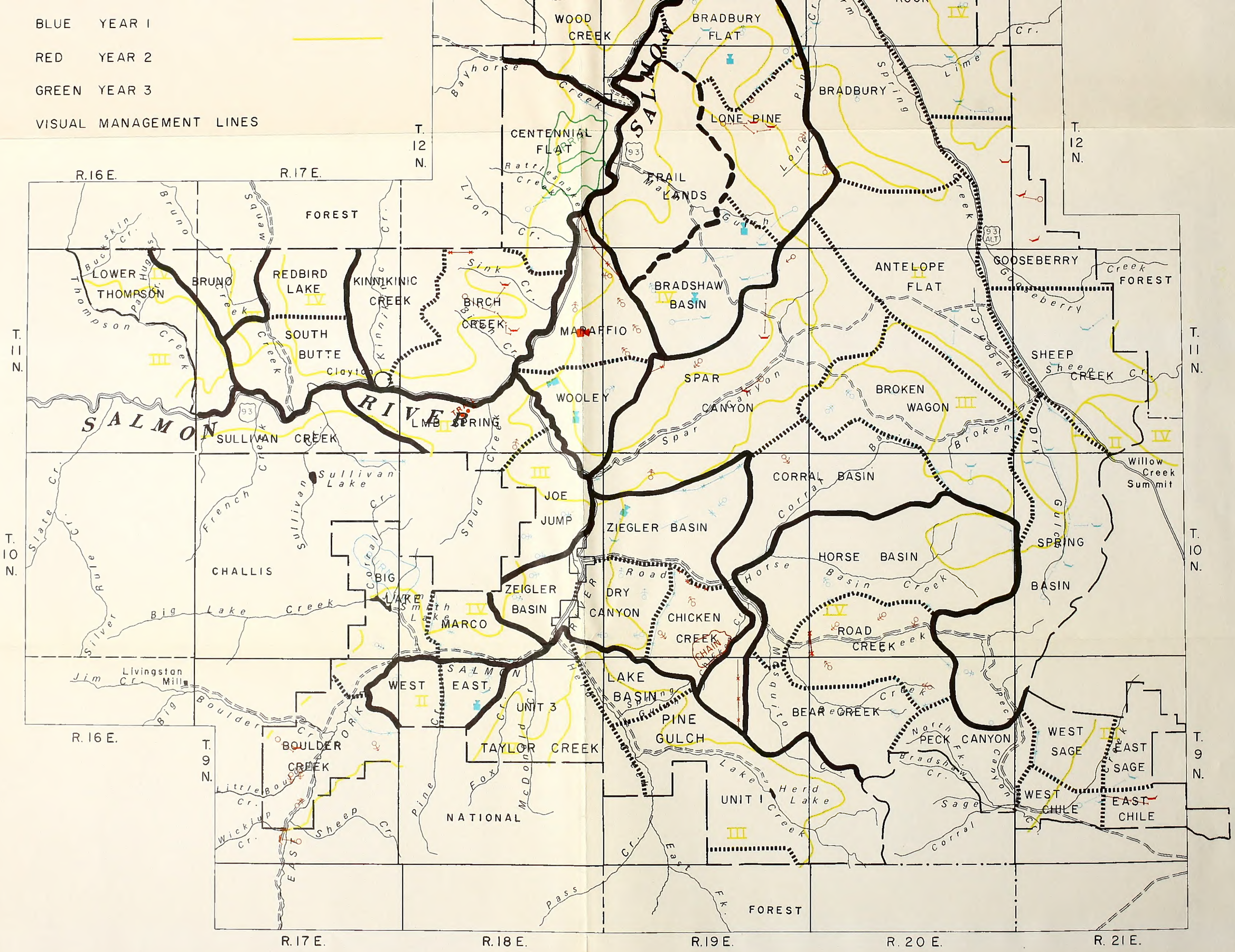

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